APPENDIX A: SMALL BUSINESS

591. This Appendix considers the extent to which the analytic results presented in the previous sections reflect potential future impacts to small businesses. The small business analysis presented in this Appendix is conducted pursuant to the Regulatory Flexibility Act (RFA) as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) in 1996. Information was gathered from the Small Business Administration, U.S. Census Bureau and U.S. Department of Agriculture. Following is a summary of the sources of potential future impacts on small businesses related to the proposed CHD.

- ***Water management activities.*** Section 4 presents a regulatory scenario in which reservoir pools are limited to current levels in order to avoid take of flycatcher habitat, thus resulting in a loss of water from beneficial use. Note that it is possible that management agencies may lack legal discretion to release water for flycatcher management purposes.[357] Small business entities that are at greatest risk of impacts under this scenario are agricultural water users, dependent on the drought reserves provided by these systems. That is, given limits in these storage capacities of these reservoirs, lower priority agricultural water users could experience a loss in irrigation water in some years. Approximately twelve major water supply dams and reservoirs are included in the proposed CHD. Of these, nine dams on four river systems provide water to agricultural users, including: Isabella Dam (Kern River); Roosevelt Dam and Horseshoe Dam (Salt River Project system); Coolidge Dam (Gila and San Pedro Rivers), and Hoover,[358] Parker, Headgate Rock, Imperial, Laguna, and Senator Wash Dams (Lower Colorado River).

[357] For example, currently there is no legal requirement for USBR to maintain water levels below flycatcher habitat at the lake created by Hoover Dam, Southwest Center for Biological Diversity v. U.S. Bureau of Reclamation, 143 F.3d 515 (9th Cir. 1998). Service and USBR Solicitors further state that the Department of Interior has interpreted the U.S. Supreme Court's injunction in Arizona v. California, 376 U.S. 340 (1964) as precluding the release of water from Lake Mead for the sole purpose of protecting flycatcher habitat. Congress has also enacted legislation to prohibit USBR from releasing San Juan/Chama water for flycatcher management purposes at Heron Reservoir. Comments of the Southwest Regional Solicitor's Office, December 15, 2004.

[358] Agricultural users that rely on water from Lake Mead should not be affected due to the lack of legal discretion held by USBR to alter water operations for the flycatcher.

While limits on the storage capacity of affected dams could ultimately affect small businesses in other economic sectors (e.g., residential construction), data and models to identify these potentially affected parties are not available.

- ***Livestock grazing activities*.** Limitations on livestock grazing are expected to impact ranchers in the region. As discussed in Section 5, under the high estimate, flycatcher conservation activities could result in a reduction in the level of grazing effort within the proposed CHD of 89,300 AUMs, of which 1,300 are Federally permitted, and 88,000 are on private lands. The AUM reduction could represent approximately 1 percent of AUMs for each of 105 affected ranchers holding Federal grazing permits in proposed CHD cumulatively over 20 years.

  On non-Federal lands, impacts on grazing efforts are more uncertain, since maps describing the overlap of privately grazed lands and the designation are not available (i.e., that portion of each ranch which could be impacted by the designation). In addition, no consultations or HCPs currently exist that affect private grazing in flycatcher habitat areas. The Service also questions the assumption that critical habitat designation will affect private grazing efforts in the future.[359] However, if ranchers reduce grazing effort to avoid incidental take of flycatchers, then impacts on those ranches would occur. If each affected ranch is small, then zero to 110 ranches cumulatively over 20 years could experience a total reduction in private lands grazing effort. (See Section A.2 for details) This would represent approximately 0.3 percent of beef cow operations in affected states.

- ***Land Development activities***. As discussed in Section 6, impacts to development activities within the proposed designation include land value loss, other project modifications, CEQA costs, and delay costs for a total of $5.3 million, or $504,000 annually (2004 dollars) in the Mojave and Santa Ana Management Units in California. Some of these impacts will be felt by small land development businesses in the affected counties of these Management Units, including San Bernardino, San Diego and Santa Barbara Counties. Assuming that only small businesses are affected by proposed CHD, less than one percent of land developers will be affected, and 0.02 percent of annual revenues of small land developers in this area may be lost.

- ***Recreation activities***. As detailed in Section 9, due to limitations on vehicle use, fires and cigarette smoking in two areas near Roosevelt Lake on the Tonto NF (Gila County, AZ), fewer trips to the area for hunting and fishing are expected in the future. A reduction in the number of recreation trips will result in an annual sales loss of approximately $386,000. Approximately 72 percent to 100 percent of businesses serving the recreation industry in Gila County are small

[359] Comments of Regional Director, Service Region 2, Albuquerque, NM, January 5, 2005; Comments of Southwest Regional Office of the Solicitor, January 3, 2005; Comments of Service, Grand Junction, Colorado, Ecological Services Office, January 3, 2005.

businesses. Collectively, these businesses generate $157.1 million in sales each year. Thus, the total annual impact of $386,000 represents approximately 0.25 percent of annual small business revenues in Gila County.

592. For each of these economic sectors, Exhibit A-1 provides the Small Business Administration size standards for various types of businesses within the industry and the affected geographic region examined in this appendix.

Exhibit A-1

SMALL BUSINESS SIZE STANDARDS FOR ACTIVITIES WITH SMALL BUSINESS IMPACTS AND AFFECTED REGIONS

NAICS Code/Industry	Size Standard	Affected Region
Water Management		
22131: Water Supply and Irrigation Systems	$6 million average annual receipts or 50,000 customers	Most counties containing proposed CHD
22111: Hydroelectric Power Generation	4 million megawatt hours for the preceding fiscal year	Phoenix area, Lower Colorado region
Livestock Grazing		
112111: Beef Cattle Ranching and Farming	$750,000	All counties containing proposed CHD
Land Development		
237210: Land Subdivision	500 employees	Santa Barbara, San Diego, San Bernardino Counties, California
Recreation		
Food and Beverage Stores		Gila County, Arizona
44511: Supermarkets and Other Grocery (Except Convenience) Stores	$23,000,000	
44512: Convenience Stores	$23,000,000	
44529: Other Specialty Food Stores	$6,000,000	
44531: Beer, Wine and Liquor Stores	$6,000,000	
Food Service and Drinking Places		
72211: Full-Service Restaurants	$6,000,000	
72221: Limited Service Eating Places	$6,000,000	
72241: Drinking Places	$6,000,000	
Accommodations		
7211: Traveler Accommodation	$6,000,000	
7212: Recreational Vehicle Parks and Recreational Camps	$6,000,000	
Transportation		
44131: Automotive Parts and Accessories Stores	$6,000,000	
44132: Tire Dealers	$6,000,000	
447190: Service Stations, Gasoline	$7,500,000	
Source: SBA's Table of Small Business Size Standards based on NAICS 2002 (http://www.sba.gov/size/indextableofsize.html).		

593. The remainder of this section addresses the potential impacts to each of the activities that may involve small entities identified above. For each activity, the number of small entities affected and potential economic impact on those small entities is estimated.

A.1 Small Business Impacts on Dam Operations and Water Supply Activities

594. Due to uncertainty regarding the potential future costs of flycatcher conservation efforts on dam operations and water supply activities, Section 4 presents two scenarios. The second scenario assumes that flycatcher conservation activities require water operators to change baseline management regimes to avoid adverse effects on flycatcher habitat. Specifically, this analysis assumes that reservoir pools will be limited to current levels in order to avoid take of flycatcher habitat. The result is a loss of water from beneficial use. Facilities assessed under this scenario include Lake Hodges, Cuyamaca Reservoir, Vail Dam, Pleasant Valley Reservoir, Isabella Dam, Hoover Dam, Parker Dam, Alamo Dam, Roosevelt Dam, Horseshoe Dam. Exhibit ES-5 summarizes the estimated water losses in acre-feet under Scenario 2, and provides perspective on the number of water users for each facility that could be affected if water is spilled and not captured for beneficial use.

Exhibit A-2

WATER USERS POTENTIALLY AFFECTED BY FLYCATCHER CHD UNDER SCENARIO 2

Management Unit	Facility Name	Estimated Water Losses Under Scenario 2 (acre-feet)	Current Water Delivery[1]		Average Annual Water Use		Users of Affected Water	
			Res/Comm/ Municipal	Agriculture	Res/Comm (per household)[2]	Agriculture (per acre)[3]	Res/Comm Households	Agriculture acres
San Diego	Lake Hodges	4,686	100%	0%	0.4	3.2	11,716	0
	Cuyamaca Reservoir	1,712	100%	0%	0.4	3.2	4,280	0
	Vail Dam	4,461	50%	50%	0.4	3.2	5,576	697
Owens	Pleasant Valley Reservoir	2,989	100%	0%	0.4	3.2	7,473	0
Kern	Isabella Dam	69,779	10%	90%	0.4	3.2	17,445	19,625
Roosevelt	Theodore Roosevelt (low)	24,700	50%	50%	0.4	4.6	30,875	2,685
	Theodore Roosevelt (high)	81,700	50%	50%	0.4	4.6	102,125	8,880
Verde	Horsehoe Dam	21,000	1%	99%	0.4	4.6	525	4,520
Hoover to Parker	Parker Dam/Lake Havasu[2]	77,338	47%	53%	0.4	3.9	90,872	10,510
						TOTAL:	**270,886**	**46,917**

Notes:
1 Based on communications with facility owners and operations.
2 Average annual acre-feet water use per year estimated based on information in the City of Santa Cruz 2000 Urban Water Management Plan, Chapter 4 Past, Current, and Projected Water Use and Jacobs and Worden (2004), Water in Arizona: Challenges Met and Remaining.
3 Agricultural water use per acre is calculated from the average acre-feet per acre of water use by farms from off-farm surface water suppliers in affected states (2003 Farm and Ranch Irrigation Survey, NASS).

595. In the main body of this report, the economic impact of the loss of water from these systems is estimated using the current price of water rights to calculate the opportunity cost associated with water lost from storage at reservoirs that may have to reduce storage to accommodate the flycatcher. It is expected that this economic cost will result in higher water prices to commercial and residential users (as a result of the need to procure alternative water supplies), and by reduced water supply during drought years. Among these users, some small businesses will likely be indirectly affected. However, sufficient information is not available to identify these small businesses, or to accurately calculate either the number of business impacted and the scale of the impact.

596. A second category of water users, however, may be more directly affected by changes in water supply that could occur as a result of flycatcher conservation activities. Specifically, those at greatest risk from a loss in water storage capacity due to flycatcher conservation activities are agricultural users dependent on the drought reserves provided by these systems.

597. Of the eight water supply dams and reservoirs presented in Exhibit A-2, four of these systems provide water to agricultural users. The following sections profile the agricultural users that are at greatest risk from direct losses in water supply under the alternate scenario of this analysis.

Lake Isabella

598. The primary holders of water storage at Lake Isabella, includes the North Kern Water Storage District, the Buena Vista Storage District, and the City of Bakersfield Water Resources Department. Water stored at Lake Isabella is primarily used for agriculture and irrigation uses (approximately 90 percent). The total area dependent upon the water stored at Lake Isabella is approximately 333,333 acres within the southern San Joaquin Valley portion of Kern County, California. Kern County irrigated crop acreage totaled 787,560 acres in 1992 with 31 percent in permanent crops (tree nuts, tree fruits, and grapes) and the remaining 69 percent in annual crops. Nearly 282,000 acres is located in water districts with Kern River contracts and entitlements, comprising nearly 36 percent of the county's irrigated acreage base.

Roosevelt and Horseshoe

599. The Salt River Project (SRP) operates six reservoirs and dams on the Salt and Verde Rivers. Together, these reservoirs provide 40 percent of the water supply to the Phoenix Active Management Area, an area of approximately 5,600 square miles.[360] SRP diverts about 900,000 af of surface water annually for use by the City of Phoenix, Salt River Pima-Maricopa Indian Community, Fort McDowell Yavapai Nation, Phelps Dodge, irrigation

[360] Final Environmental Impact Statement for the Roosevelt Habitat Conservation Plan, Gila And Maricopa Counties, Arizona Volume 1 of the FEIS. Service, 2002. p 15

users, and other communities in the Phoenix area, including Chandler, Glendale, Mesa, Scottsdale, and Tempe. The system serves 240,000 acres over an area of 375 square miles.

600. Roosevelt Reservoir is the largest of four reservoirs on the Salt River, representing 71 percent of the total surface water storage capacity in the SRP system.[361] Horseshoe Reservoir has a current storage capacity of 109,217 acre-feet. The SRP service area is in Gila and Maricopa Counties, Arizona. Gila County reported 63 farms on 1,228 irrigated acres in 2002; Maricopa County reported 1,344 farms on 237,532 acres in 2002. The market value of agricultural products in these counties was 743 million in $2002, 99 percent of which came from Maricopa County.

Coolidge Dam

601. The Coolidge Dam is operated by the San Carlos Irrigation Project for purposes of providing irrigation to Gila River Indian Community (GRIC) and the San Carlos Irrigation and Drainage District (SCIDD).

Lower Colorado

602. Water from the Colorado River is diverted to six states, and is used for every purpose, including municipal, agricultural, and hydropower uses. Exhibit A-3 presents background information on the agricultural inputs to the Colorado River.

Exhibit A-3

CHARACTERISTICS OF AGRICULTURAL PRACTICES IN THE LOWER COLORADO WATERSHED*

Agriculture	Arizona	California
Irrigated Acres Served by Colorado River water	560,000	900,000
Major Crops under irrigation	cotton, alfalfa, lettuce, wheat, citrus, barley, cauliflower	cantaloupes, dates, grapes, oranges, lemons, avocados, other fruits, lettuce, tomatoes, onions, carrots, other vegetables, alfalfa, wheat, grasses, other forage crops

* Only eight percent of Southern Nevada water use is for non-urban uses, including irrigation for golf courses, parks, school grounds, and other turf.

A.2 Small Business Impacts on Livestock Grazing Activities

603. The proposed CHD includes areas of USFS, BLM, and private lands that are used for seasonal or year round livestock grazing. On some Federal allotments that contain flycatcher habitat, riparian areas have been excluded from grazing either year-round or seasonally, thus reducing the carrying capacity, or permitted AUMs, on those allotments. Historically, returns to cattle operations have been low throughout the Southwest. In recent years, these returns have been lower yet due to the recent drought. As a result, any

[361] Ibid. p 18.

reductions in grazing effort for flycatcher may affect the sustainability of ranching operations in these areas.

604. This analysis assumes that, in the future, grazing efforts on proposed CHD areas will be reduced, or, in the high-end estimate, eliminated due to flycatcher concerns. Private ranches could be affected either by reductions in federally permitted AUMs that they hold permits to, or by reductions on grazing effort on private property to avoid adverse impacts on flycatcher habitat. As discussed in Section 5, the expected reduction in AUMs is based on an examination of historic grazing levels, section 7 consultations, and discussions with range managers, wildlife biologists, and permittees. Based on this analysis, the high impact for allotments in the proposed CHD is estimated at an annual reduction of 89,300 AUMs, of which 1,200 are Federally permitted, and 88,000 are private.

605. To estimate the number of potentially affected ranchers that hold Federal permits, this analysis assumes that each rancher holds permits to one allotment in the proposed CHD. The number of affected allotments in proposed critical habitat was estimated at 105 using GIS data of allotment boundaries. If each rancher holds a permit to one allotment, then each affected rancher is likely to experience a loss of 13 AUMs. USFS information for authorized AUMs in Regions 3 and 5 suggest that a typical permittee grazes 1,070 AUMs annually.[362] Thus, this AUM reduction could represent approximately 1 percent of AUMs for each of the 105 affected ranchers on an annual basis.

606. On non-Federal lands, impacts on grazing efforts are uncertain, since maps describing the overlap of privately grazed lands and the designation are not available (i.e., that portion of each ranch which could be impacted by the designation). In addition, no consultations or HCPs currently exist that affect private grazing in flycatcher habitat areas. The Service also questions the assumption that critical habitat designation will affect private grazing efforts in the future.[363] However, if ranchers reduce grazing effort to avoid incidental take of flycatchers, then impacts on those ranches would occur. On non-federal lands, this analysis estimates a reduction in grazing effort on private lands of zero to 88,000 AUMs as a result of flycatcher conservation activities on non-federal lands over 20 years. Assuming an average forage factor per cow/calf pair of 1.35, and that every cow is grazed year-round on private lands, this would be equivalent to a reduction of approximately zero to 5,500 head of cattle over 20 years.[364] As shown in Exhibit A-4, cattle ranches can range in size from less than 50 cattle to well over 500 cattle. For the purposes of this analysis, all privately grazed lands in the proposed CHD are assumed to be part of small ranches (50-100 cattle). If each affected ranch is small, then approximately zero to 110 small ranches could be

[362] USDA Grazing statistical summaries for 2000-2002. Accessed at htttp://www.fs.fed.us/rangelands/infocenter/library/shtml. Based on data for "Total Authorized" number of AUMs and total permittees for National Forests.

[363] Comments of Regional Director, Service Region 2, Albuquerque, NM, January 5, 2005; Comments of Southwest Regional Office of the Solicitor, January 3, 2005; Comments of Service, Grand Junction, Colorado, Ecological Services Office, January 3, 2005;

[364] A forage factor of 1.35 per mature cow is typical for cow/calf ranches when cows, bulls, horses, and replacement heifers are considered. (Workman, J.P. 1986. Range Economics. MacMillan Publishing Co., New York, N.Y.)

affected by total reductions in privately grazed AUMs. If these ranches depend on private forage, they would have to purchase supplemental forage This would represent approximately 0.3 percent of beef cow operations in affected states.

Exhibit A-4

BEEF COWS: NUMBER OF OPERATIONS BY SIZE GROUP, 2003
(Number of head)

State	Total Operations	Extra Small > 50 Head	Small 50-99 Head	Medium 100-499 Head	Large > 500 Head
Arizona	2,009	1,359	200	380	70
California	12,000	9,300	810	1,600	290
Colorado	10,400	6,700	1,670	1,800	230
New Mexico	6,400	4,400	820	1,000	180
Utah	5,200	3,400	750	950	100
Total	36,009	25,159	4,250	5,730	870
Percent	*100.0%*	*69.9%*	*11.8%*	*15.9%*	*2.4%*

Source: "Livestock Operations 2003 Summary," National Agricultural Statistics Service, USDA, April 2004; Nevada estimates were not available.

A.3 Small Business Impacts on Land Development Activities

607. Because flycatcher habitat is contained within the 100-year floodplain, the analysis limits flycatcher impacts on development to areas within proposed CHD where real estate demand is expected to support the additional cost burden associated with developing in the floodplain. No regional price increases are expected, and the cost burden resulting from flycatcher conservation efforts is expected to fall entirely on owners of land within the proposed designation, in the form of reduced raw land prices for parcels affected by proposed CHD. In many instances, the existing landowners may not be a business. Rather, they may be individuals holding the land as an investment. However, to be conservative, this analysis assumes that all of the landowners impacted by future flycatcher conservation activities are developers. This assumption is likely to overstate the actual impacts to small land development firms. Impacts to landowners include land value loss, other project modifications, CEQA costs and delay costs. These future impacts are expected to occur in the San Diego, San Bernardino and Santa Barbara Counties in California within the Mojave and Santa Ana Management Units.

608. To estimate the number of future projects affects, this analysis uses the historic rate of CEQA document submittal by County. The number of CEQA documents submitted in each county between 1995 and 2004 are converted to a historical annual rate, which is used to project future document submittals in proposed CHD based on population growth and development forecasts for the CHD area in each county. The total number of affected projects estimated in Section 7 of this report was 0.52 projects. As a result, the number of small land developers affected annually is less than 0.01 percent of the 1,300 small land development firms in the region.

Exhibit A-5

IMPACT TO SMALL BUSINESSES IN THE LAND DEVELOPMENT SECTOR IN THE PROPOSED CHD

	Costs in 2004$
Total Development Impacts	
Land Value Loss	$3,681,000
Other Project Modifications	$1,648,000
CEQA Costs	$12,000
Delay Costs	$1,000
Total Impact	$5,342,000
Annual Impact[1]	$504,000
Annual Revenues of Small Land Development Businesses in San Diego, Santa Barbara, and San Bernardino Counties[2]	$2,038,400,000
Percent Impact Assuming All Impacts are Borne by Small Businesses	**0.02 %**

Notes:
[1] Costs are annualized over 20 years using a 7 percent discount rate.
[2] Businesses in the NAICS code #237210 "Land Subdivision." Defined as "small" businesses using the Small Business Administration definition as businesses with a gross annual income of $6 million or less. Revenue data is based on Robert Morris Associates (RMA) data for 2003.

A.4 Small Business Impacts on Recreation Activities

609. Impacts to small businesses in this industry result from a reduction in fishing and hunting trips to the Roosevelt Lake area of Tonto NF, due to restrictions on activities related to flycatcher conservation efforts. These impacts are discussed in Section 9 of this report. This reduction in the number of fishing and hunting trips in each region is estimated to result in an annual sales loss of $386,000 (2004 dollars). As illustrated in Exhibit A-1, these impacts are spread across a variety of industries including food and beverage stores, food service and drinking places, accommodations, transportation, and sporting goods.

610. Exhibit A-6 illustrates the total number of businesses in Gila County, Arizona, that could be affected by this loss in sales. This exhibit also indicates the number of these businesses that are classified as small businesses (based on SBA size standards).

Exhibit A-6

SMALL BUSINESSES IMPACTS ASSOCIATED WITH RECREATION-RELATED EXPENDITURES GILA COUNTY, ARIZONA

Economic Sector	# Businesses[1]	# of Small Businesses[1]	Total Revenues[2]	Small Business Revenues[3]
Food and Beverage Stores				
44511: Supermarkets and Other Grocery (Except Convenience) Stores	27	25		
44512: Convenience Stores	21	21		
44529: Other Specialty Food Stores	2	2		
44531: Beer, Wine and Liquor Stores	3	3		
Subtotal Food and Beverage Stores	53	51	$83,041,000	$79,907,000
Food Service and Drinking Places				
72211: Full-Service Restaurants	68	43		
72221: Limited Service Eating Places	43	32		
72241: Drinking Places	18	18		
Subtotal Food Service and Drinking Places	129	93	$40,551,000	$29,234,000
Accommodations				
7211: Traveler Accommodation	41	33		
7212: RV Parks and Recreational Camps	16	16		
Subtotal Accommodations	57	49	$15,633,000	$13,439,000
Transportation				
44131: Automotive Parts and Accessories Stores	10	10	$14,669,000	$14,669,000
44132: Tire Dealers	4	4		
447190: Service Stations, Gasoline	15	14	$21,060,000	$19,656,000
Subtotal Transportation	29	28	$35,729,000	$34,497,000
Total, All Recreation-Related Sectors	268	221	$174,954,000	$157,078,000
Total Impact from Reduced Recreation (Section 9.1.4)				$386,000
Recreation Impacts as a Percentage of Affected Small Business Revenues				0.25%

Notes:

[1] Dialog search of File 516, Dun and Bradstreet, "Duns Market Identifiers." Additional NAICs codes were considered; however, because no businesses were reported in our search, these codes(NAICS 44522, 44523, 72233, and 44121 are not included here. Small businesses were determined based on the SBA size standard reported in Exhibit 10-1.

[2] U.S. Census Bureau, 1997 Economic Census for Gila County Arizona. Accessed on November 24, 2004, at http://www.census.gov/epcd/ec97/az/AZ000.html. Where sales were not available for specific subsectors, we used the entire sector. Specifically, we used sector 445 Food and Beverage Stores, sector 721 for Accommodation, and sector 722 for Foodservices and drinking places, and sector 4413 for Automotive Parts and Accessories and tire stores.

[3] Small business revenues are estimated by applying the percentage of businesses in each sector that are small to the total revenues for that sector.

611. Specifically, there are 221 small businesses in these industries in Gila County.[365] Depending on the sector, between 72 percent and 100 percent of the businesses serving hunting and fishing recreators in Gila County are small businesses. Sales generated by these small businesses are estimated at $157.1 million.[366] Thus, the total annual impact of $386,000 is equivalent to 0.25 percent of small business revenues in affected industries in Gila County.

[365] Dialog search of File 516, Dun and Bradstreet, "Duns Market Identifiers."

[366] U.S. Census Bureau, 1997 Economic Census for Gila County Arizona. Accessed on November 24, 2004, at http://www.census.gov/epcd/ec97/az/AZ000.html.

APPENDIX B: POTENTIAL IMPACTS ON THE ENERGY INDUSTRY

612. Pursuant to Executive Order No. 13211, "Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use," issued May 18, 2001, Federal agencies must prepare and submit a "Statement of Energy Effects" for all "significant energy actions." The purpose of this requirement is to ensure that all Federal agencies "appropriately weigh and consider the effects of the Federal Government's regulations on the supply, distribution, and use of energy."[367] The Office of Management and Budget has provided guidance for implementing this Executive Order that outlines nine outcomes that may constitute "a significant adverse effect" of a regulatory action under consideration:

- Reductions in crude oil supply in excess of 10,000 barrels per day (bbls);
- Reductions in fuel production in excess of 4,000 barrels per day;
- Reductions in coal production in excess of 5 million tons per year;
- Reductions in natural gas production in excess of 25 million Mcf per year;
- Reductions in electricity production in excess of 1 billion kilowatts-hours per year or in excess of 500 megawatts of installed capacity;
- Increases in energy use required by the regulatory action that exceed the thresholds above;
- Increases in the cost of energy production in excess of one percent;
- Increases in the cost of energy distribution in excess of one percent; or
- Other similarly adverse outcomes.[368]

613. Two of these criteria are relevant to this analysis: (1) reductions in electricity production in excess of one billion kilowatt-hours per year or in excess of 500 MWs of installed capacity and (2) increases in the cost of energy production in excess of one percent. Below, the analysis determines whether the electricity industry is likely to experience "a significant adverse effect" as a result of flycatcher conservation activities.

[367] U.S. Office of Management and Budget, The Executive Office of the President, "Memorandum For Heads of Executive Department Agencies, and Independent Regulatory Agencies, Guidance For Implementing E.O. 13211, M-01-27," July 13, 2001.
[368] *Ibid.*

B.1.1 Evaluation of Whether the Designation will Result in a Reduction in Electricity Production in Excess of One Billion Kilowatt-Hours Per Year or in Excess of 500 Megawatts of Installed Capacity

614. Installed capacity is "the total manufacturer-rated capacity for equipment such as turbines, generators, condensers, transformers, and other system components" and represents the maximum rate of flow of energy from the plant, or the maximum output of the plant. As noted in Section 4 of this report, restricting reservoir elevations to current levels to avoid inundating flycatcher habitat would result in a loss of water storage capacity and thus the release of water from reservoirs in some years that otherwise would have been stored. In some instances, water spilled would be lost to use for power generation. In other instances, the water would be used to generate electricity during non-summer months when the value of electricity is lower. This, however, affects the cost of power production, and installed capacity remains unchanged.

615. Five dams that control reservoirs that fall within the proposed critical habitat designation have installed hydropower generating capacity: Roosevelt (36 MW), Hoover (2,079 MW), Parker (120 MW), Headgate Rock (19.5 MW), and Senator Wash (7.2 MW). If Scenario 2 for water management activities were reasonably foreseeable, then flycatcher conservation activities could impact the reservoir operations, including power generation, of the three larger facilities, Roosevelt, Hoover, and Parker. At the two remaining facilities, Senator Wash and Headgate Rock, flycatcher conservation activities would not be expected to impact reservoir and hydropower operations.

- Senator Wash Dam and reservoir, owned by the USBR and operated by the Imperial Irrigation District, cover about 470 surface acres and holds approximately 14,000 acre-feet of water. This is a pump and store reservoir that provides off-stream regulatory storage to manage the fluctuating flows at the lower end of the Colorado River System (i.e., to temporarily store water ordered in excess of user needs). While there is 7.2 MW of installed hydroelectric generating capacity at the dam, power produced at Senator Wash is primarily used to run pumps that bring water from Imperial Reservoir to Senator Wash.[369]

- Headgate Rock Dam is a run-of-the-river hydroelectric plant owned and operated by the BIA for the primary use of the Colorado River Indian Tribes and other Indian Tribes. Power generation is dependent upon the flow of the river. The structure does create a small impoundment (Lake Moovalya), but the impoundment has very little storage capacity. The river flow through the dam is not anticipated to be affected by flycatcher conservation activities. During 1996 and 1997, net energy production averaged 87,165 MWh annually.[370]

[369] Personal communication with Bruce Williams, Daily Operations Team Lead, Boulder Canyon Operation Office, USBR, December 22, 2004.

[370] IID Water Conservation and Transfer Project, Draft Habitat Conservation Plan, Draft EIR/EIS. Available at http://projects.ch2m.com/iidweb/current/documents/draft/20Section3.12.pdf.

616. Energy-related impacts related to flycatcher conservation activities are likely to be displacements of peak hydroelectric energy production during the year to less productive times of the year. This practice does not reduce average energy production, but rather changes the temporal distribution of that power production. Shifting water releases from the summer, when electric power prices are generally higher, to other times of the year in order to maintain lower reservoir levels may reduce revenues. This is the situation at Roosevelt Dam, where model simulations of reservoir operations show that accommodating flycatcher conservation efforts may result in a net increase in power production. While hydroelectric power production increases, however, revenues under flycatcher conservation activities are forecast to decline by $1.3 to $2.6 million annually.[371]

617. This analysis assumes that because of USBR's current position that it lacks discretion to release water from Lake Mead to benefit flycatcher habitat, operational changes under Scenario 2 at Lake Mead are not reasonably foreseeable.[372] While it is likely that USBR will also argue that it lacks discretion at other facilities on the Lower Colorado River, the precedent is less clear. The USBR nonetheless states: "With the implementation of the Multi-Species Conservation Program, and due to legal requirements for delivery of water, there will be no changes in the operation of the Lower Colorado River. Minimum flows and water diversions are non-discretionary actions associated with the delivery of water based on laws and treaties. Currently all conservation programs are completed through a willing sellers program, and it is not foreseen that any forbearance agreements are to be enacted specifically for the Southwestern Willow Flycatcher along the Lower Colorado River."[373] Parker Dam is discussed in this analysis as if Scenario 2 for water management activities is reasonably foreseeable. This analysis recognizes that Scenario 2 is mostly likely not to occur at Parker Dam.

Roosevelt Dam

618. Salt River Project (SRP) personnel provided estimates of power production for two operation alternatives under the 2002 Roosevelt Habitat Conservation Plan (HCP). The first alternative restricts reservoir operations to an elevation of 2,095 feet; the second alternative restricts operations to an elevation of 2,125 feet. The level of Roosevelt during full operations is 2,151 feet. Based on Salt River Project Simulation Model (SRPSIM), a model that simulates SRP reservoir operation alternatives, the annual power production of the hydroelectric facility at full operations (2,151 feet) is 77,462 MWh.[374]

[371] Final Environmental Impact Statement for the Roosevelt Habitat Conservation Plan, Gila and Maricopa Counties, Arizona, Volume I of the FEIS, December 2002.

[372] There is no current legal requirement for USBR to maintain water levels below flycatcher habitat at the lake created by Hoover Dam, Southwest Center for Biological Diversity v. U.S. Bureau of Reclamation, 143 F.3d 515 (9th Cir. 1998). Service and USBR Solicitors further state that the Department of Interior has interpreted the U.S. Supreme Court's injunction in Arizona v. California, 376 U.S. 340 (1964) as precluding the release of water from Lake Mead for the sole purpose of protecting flycatcher habitat. Comments of the Southwest Regional Solicitor's Office, December 15, 2004.

[373] "Economic Analysis: Southwestern Willow Flycatcher: 2006-2004", Lower Colorado Regional Office, USBR, written memorandum, July 2004.

[374] Salt River Project, Roosevelt Lake Habitat Conservation Plan, Appendix 3: SRMSIM Model, December 2002.

In contrast, the annual power production with reservoir elevations of 2,125 and 2,095 feet is 78,617 MWh and 80,311 MWh, respectively.[375] Thus, the impact to hydroelectric production resulting from changes to reservoir operations to accommodate flycatcher conservation efforts is a net gain in power generation of 1,155 to 2,849 MWh.

Hoover Dam

619. If conservation efforts for the flycatcher resulted in USBR attempting to maintain a storage level of 1,200 feet in elevation for Lake Mead (Hoover Dam), to avoid inundating flycatcher habitat, the result would be a loss of storage capacity in some years. However, as stated above, this analysis assumes that because of USBR's current position that it lacks discretion to release water from Lake Mead to benefit flycatcher habitat, operational changes under Scenario 2 at Lake Mead are not reasonably foreseeable.

Parker Dam

620. If Scenario 2 is reasonably foreseeable at Parker Dam, then attempting to maintain a reservoirs levels to avoid inundating flycatcher habitat would result in a loss of storage capacity in some years. This analysis finds that this management strategy would result in displacing 77,338 acre-feet of water in an average year. An acre-foot of water released from Parker dam generates approximately 65 kWh of electricity.[376] Therefore, 5,011 MWh,[377] or approximately 0.6 average MWs of hydroelectric energy-production, is expected to be displaced in an average year due to changes to reservoir operations to accommodate flycatcher conservation efforts.[378] This is equal to about one percent of Parker dam's average annual net electricity production during the past ten years and 0.5 percent of its nameplate capacity.[379] As with Lake Mead, no net loss of electricity production is expected. Further, displaced peak production is expected to be replaced with an alternative, more expensive power supply (see B.1.2).

621. Because no net reduction in electricity production is anticipated, the suggested OMB threshold of one billion kWh is not anticipated to be exceeded.

B.1.2 Evaluation of Whether the Designation will Result in an Increase in the Cost of Energy Production in Excess of One Percent

622. The following analysis considers the probability that displacing hydroelectric production from peak to off-peak production times will lead to a regional increase in the cost of energy production of one percent or more. Because 4 million kWh (5.011 million KWh displaced at Parker less 1.155 million kWh gained at Roosevelt) represents a small

[375] Personal communication, Yvonne Reinink, Salt River Project, November 30, 2004.
[376] Average production at Parker dam during the 12-month period of December 2003 through November 2004. U.S. Department of the Interior, Bureau of Reclamation, Lower Colorado Region, Archives of Daily Levels/Elevations for Lower Colorado River Reservoirs, available at http://www.usbr.gov/lc/region/g4000/archives.html.
[377] 77,338 acre-feet * 65 kWh/acre-feet * 1 MWh/1,000 kWh = 5,011 MWh (note: estimates rounded).
[378] 5,011 MWh * 1 average MW/8,760 MWh = 0.57 average MW (note: estimates rounded).
[379] The annual net electricity production at Parker dam during the past ten years averaged approximately 5 million kWh. While the installed nameplate capacity is 120 MW, the plant has a 108 MW maximum operating capacity. Source: http://www.usbr.gov/power/data/sites/hoover/hoovergr.pdf.

portion of the power generated within the six states encompassing the proposed critical habitat designation, this screening level analysis assumes the electricity will be purchased from an alternative source.[380] This analysis assumes the most likely source of replace energy is electricity from a gas turbine peaking facility.

623. First, total annual net electricity generation is estimated,[381] by fuel type, for the six state region. As shown in Exhibit B-1, the region produced 446 billion kWh of electricity in 2000.

Exhibit B-1

REGIONAL NET GENERATION BY FUEL TYPE, 2000 (million kWh)

Fuel Type	CA	AZ	NV	UT	CO	NM	Total
Hydroelectric	39,211	8,643	2,436	751	1,494	221	52,756
Gas	106,313	8,872	12,822	1,146	6,668	4,669	140,490
Petroleum	2,359	194	65	57	113	37	2,825
Coal	2,471	41,012	18,932	34,477	35,386	29,067	161,345
Nuclear	35,176	30,381	-	-	-	-	65,557
Other	21,518	-	1,384	160	-	-	23,062
Total	207,048	89,102	35,639	36,591	43,661	33,994	446,035

Source: Energy Information Administration, Electric Power Annual 2000, Tables A8 through A13, Net Generation from Coal, Petroleum, Gas, Nuclear, Hydroelectric, and Other by Census Division and State, 2000 and 1999.

624. Next, the average operating expense is calculated for each fuel type. In this screening level analysis, the average, in mills per kWh, is determined for the years 1996 to 2000, and then converted into dollars per kWh (Exhibit B-2).

625. The total cost of energy production for the region is then calculated assuming (1) baseline scenario of no change in power operations and (2) alternative scenario including the replacement of hydroelectric power (lost generation from Parker plus increased generation at Roosevelt) with power from a gas turbine facility (Exhibit B-3). Spilling additional water is assumed not to increase costs of hydroelectric production. Therefore, the estimated production costs of hydroelectric energy associated with the implementation of flycatcher conservation activities (alternative scenario) are assumed to remain the same as current production costs (baseline scenario).

626. Finally, the costs of producing 4 million kWh of energy from a gas turbine facility due to the displacement power at Roosevelt and Parker Dams are compared to regional energy production costs to determine impacts. As illustrated in Exhibit B-3, total financial impacts related to flycatcher conservation activities ($2.7 million annually) represent 0.02 percent of the estimated annual baseline cost of regional energy production, well below the one percent threshold suggested by OMB.

[380] In 2000, regional energy production by all fuel types in California, Arizona, Nevada, Colorado, Utah, and New Mexico totaled approximately 446 billion kWh (Exhibit B-1).

[381] Net generation is gross generation less plant use. The energy required for pumping at a pumped storage plant is regarded as "plant use" and is deducted from the gross generation.

627. It is therefore estimated that constraints placed on energy production within the region resulting from flycatcher conservation activities will not result in significant decreases in production or increases in energy costs within the region.

Exhibit B-2

AVERAGE OPERATING EXPENSES FOR MAJOR U.S. INVESTOR-OWNED ELECTRIC UTILITIES
(Mills per Kilowatt-hour)

Expense	2000	1999	1998	1997	1996	Average
Operating						
Nuclear	8.41	8.93	9.98	11.02	9.47	9.56
Fossil Steam	2.31	2.21	2.17	2.22	2.25	2.23
Hydroelectric	4.74	4.17	3.85	3.29	3.87	3.98
Gas Turbine and Small Scale	4.57	5.16	3.85	4.43	5.08	4.62
Maintenance						
Nuclear	4.93	5.13	5.79	6.90	5.68	5.69
Fossil Steam	2.45	2.38	2.41	2.43	2.49	2.43
Hydroelectric	2.99	2.60	2.00	2.49	2.08	2.43
Gas Turbine and Small Scale	3.50	4.80	3.43	3.43	4.98	4.03
Fuel						
Nuclear	4.95	5.17	5.39	5.42	5.50	5.29
Fossil Steam	17.69	15.62	15.94	16.80	16.51	16.51
Hydroelectric	0.00	0.00	0.00	0.00	0.00	0.00
Gas Turbine and Small Scale	39.19	28.72	23.02	24.94	30.58	29.29
Total, mills/kWh						
Nuclear	18.29	19.23	21.16	23.34	20.65	20.53
Fossil Steam	22.45	20.21	20.52	21.45	21.25	21.18
Hydroelectric	7.73	6.77	5.85	5.78	5.95	6.42
Gas Turbine and Small Scale	47.26	38.68	30.30	32.80	40.64	37.94
Total, $/kWh						
Nuclear	0.0183	0.0192	0.0212	0.0233	0.0207	0.0205
Fossil Steam	0.0225	0.0202	0.0205	0.0215	0.0213	0.0212
Hydroelectric	0.0077	0.0068	0.0059	0.0058	0.0060	0.0064
Gas Turbine and Small Scale	0.0473	0.0387	0.0303	0.0328	0.0406	0.0379

Note: Operating expenses do not include capital or transmission costs.
Source: Energy Information Administration, Electric Power Annual 2000, Table 13. Average Operating Expenses for Major U.S. Investor-Owned Electric Utilities 1996 Through 2000.

Exhibit B-3

INCREASE IN REGIONAL COST OF ENERGY PRODUCTION

Fuel Type	2000 Actual, million kWh	Moving million KWr From Hydro to Gas, million kWh	Change in Regional Energy Production (a) (Million kWh)	Average Operating Cost 1996 to 2000, $/kWh	Estimated Cost of Energy Production in 2000 $	Estimated Cost Moving (a) million kWr From Hydro to Gas, $	
Hydro	52,756	52,752	-4	0.00642	338,482,496	338,457,754	-24,742
Gas	140,490	140,494	4	0.03794	5,329,628,640	5,329,774,934	146,294
Petroleum	2,825	2,825	0	0.02118	59,822,200	59,822,200	0
Coal	161,345	161,345	0	0.02118	3,416,641,720	3,416,641,720	0
Nuclear	65,557	65,557	0	0.02053	1,346,147,438	1,346,147,438	0
Other	23,062	23,062	0	0.03794	874,880,032	874,880,032	0
Total	446,035	446,035	0	-	11,365,602,526	11,365,724,078	121,552
Total Impact of Changes in Energy Production at Three Dams							
Incremental cost of displacing kWh from hydroelectric to gas					$121,552		
Value of lost power production from Roosevelt dam					$2,600,000		
Total Economic Impact					$2,721,552		
Percent increase from baseline energy production costs					0.02%		

APPENDIX C: COSTS ASSOCIATED WITH AREAS PROPOSED FOR EXCLUSION

628. Section 4(b)(2) of the Act states that critical habitat shall be designated, and revised, on the basis of the best available scientific data available after taking into consideration the economic impact, impact on national security, and any other relevant impact, of specifying any particular area as critical habitat. An area may be excluded from critical habitat if it is determined that the benefits of such exclusion outweigh the benefits of specifying a particular area as critical habitat, unless the failure to designate such area as critical habitat will result in the extinction of the species.

629. Within the 376,000 acres identified as essential habitat for the flycatcher across six states, 102,000 acres are excluded from CHD, proposed for exclusion from CHD, or considered for exclusion from CHD.[382] These areas include Tribal lands, lands managed by DOD, National Wildlife Refuges, private lands with legally operative HCPs or draft HCPs, State lands with conservation plans, and other lands with management plans in place for the southwestern willow flycatcher. Specifically, this appendix considers:

- **Areas Excluded from CHD**. This includes areas covered by certain approved and pending HCPs and lands owned and managed by the Department of Defense. For these lands, the Service determined that the benefits of excluding these lands outweigh the benefits of their inclusion (69 FR 60706). Specifically, this group includes areas covered by the Western Riverside Multiple Species Conservation Plan; the San Diego Multiple Species Conservation Program; and the City of Carlsbad's Habitat Management Plan. Military lands that fall into this group, include the Marine Corps Base, Camp Pendleton; and the Seal Beach Naval Weapons Station, Fallbrook Detachment.

- **Areas Proposed for Exclusion from CHD**. This includes areas covered by the Lake Roosevelt Habitat Conservation Plan, which the Service is proposing to exclude from CHD because it is already managed to protect the PCEs.

[382] For a detailed review of various exclusions under consideration, see pages 60724-60731of the proposed rule to designate critical habitat for the flycatcher (69 FR 60706).

- **Areas Considered for Exclusion from CHD**. This group includes State Wildlife Areas (SWA), National Wildlife Refuge (NWR) lands, and Tribal and Pueblo lands. For these lands the Service "may consider for exclusion from the final designation of critical habitat based upon further analysis and public comment (69 FR 60729)." Specifically, this group, includes the Clark County Multiple Species Habitat Conservation Plan; the Lower Colorado River Multi-Species Conservation Plan; Hualapai Tribe; Lower Colorado River Indian Tribes; San Carlos Apache Tribe; Key Pittman SWA; Overton SWA; Pahranagat NWR; Bill Williams NWR; Havasu NWR; Cibola NWR; and Imperial NWR; Alamosa/Monte Vista NWRs; Boseque del Apache NWR; and Sevilleta NWR.

630. As shown in Exhibit C-1, areas excluded from CHD comprise 11,000 acres, or three percent of essential habitat; areas proposed for exclusion comprise 19,500 acres, or five percent of essential habitat; and areas considered for exclusion comprise 71,500 acres, or 19 percent of essential habitat.

631. Exhibits C-2 summarizes the annual future costs by management unit resulting from flycatcher conservation activities in each of these three groups. Additional detail for each group is provided in the following exhibits C-3 to C-5. For each group, non-monetized impacts resulting from flycatcher protection are also presented. This includes the impacts of flycatcher conservation activities on fire management activities, represented by the number of CHD acres that overlap WUI areas, and activities on military and Tribal lands.

Exhibit C-1

TOTAL NUMBER OF ACRES OF AREAS EXCLUDED, AREAS PROPOSED FOR EXCLUSION, AND AREAS CONSIDERED FOR EXCLUSION FROM FLYCATCHER CRITICAL HABITAT

Recovery Unit	Management Unit	Total Acres Proposed Rule	Areas Excluded from CHD	Areas Proposed for Exclusion from CHD	Areas Considered for Exclusion from CHD
Basin and Mojave	Kern	5,309	0	0	0
	Mojave	2,553	0	0	0
	Owens	9,366	0	0	0
	Salton	206	0	0	27
Coastal California	San Diego	15,890	9,634	0	1,050
	Santa Ana	10,608	1,285	0	0
	Santa Ynez	3,855	0	0	0
Gila	Middle Gila/San Pedro	24,287	0	232	0
	Roosevelt	29,520	0	19,171	0
	San Pedro	26	0	0	0
	Upper Gila	27,372	0	0	8,888
	Verde	10,207	0	124	165
Lower Colorado	Bill Williams	20,596	0	0	2,385
	Hoover-Parker	41,662	0	0	18,980
	Little Colorado	609	0	0	0
	Middle Colorado	6,762	0	0	1,721
	Pahranagat	3,897	0	0	3,511
	Parker-Southerly International Border	25,437	0	0	6,422
	Virgin	13,714	0	0	3,007
Rio Grande	Middle Rio Grande	49,593	0	0	13,090
	San Luis Valley	68,437	0	0	7,822
	Upper Rio Grande	6,318	0	0	4,426
	TOTAL:	**376,223**	**10,919**	**19,527**	**71,494**
	% of Total:		**3%**	**5%**	**19%**

Exhibit C-2

COSTS ASSOCIATED WITH AREAS EXCLUDED, AREAS PROPOSED FOR EXCLUSION, AND AREAS CONSIDERED FOR EXCLUSION FROM FLYCATCHER CRITICAL HABITAT

		Areas Excluded from CHD		Areas Proposed for Exclusion from CHD		Areas Considered for Exclusion from CHD	
Recovery Unit	**Management Unit**	**Annual Future Costs**	**Non-Monetrized Costs**	**Annual Future Costs**	**Non-Monetrized Costs**	**Annual Future Costs**	**Non-Monetrized Costs**
Coastal California	Santa Ynez	$0		$0		$0	
	Santa Ana	$2,032,000	• 377 WUI acres • Marine Corps Base at Camp Pendleton • Fallbrooks Naval Weapons Station	$0		$0	
	San Diego	$324,000	• 2,630 WUI acres	$0		$72,000	• 289 WUI acres
Basin and Mojave	Owens	$0		$0		$0	
	Kern	$0		$0		$0	
	Mohave	$0		$0		$0	
	Salton	$0		$0		$8,000	
Lower Colorado	Little Colorado	$0		$0		$0	
	Virgin	$0		$0		$15,000	
	Middle Colorado	$0		$0		$4,388,000	
	Pahranagat	$0		$0		$120,000	• 31 WUI acres
	Bill Williams	$0		$0		$23,000	
	Hoover to Parker	$0		$0		$7,992,000	• 78 WUI acres
	Parker to Southerly	$0		$0		$7,989,000	• 221 WUI acres
Gila	Verde	$0		$10,000	• 124 WUI acres	$12,000	• 165 WUI acres
	Roosevelt	$0		$3,038,000	• 2 WUI acres	$0	
	Middle Gila/San Pedro	$0		$6,000	• 48 WUI acres	$0	
	Upper Gila	$0		$0		$151,000	• 976 WUI acres
Rio Grande	San Luis	$0		$0		$10,000	
	Upper Rio Grande	$0		$0		$47,000	• 1,966 WUI acres
	Middle Rio Grande	$0		$0		$88,000	• 153 WUI acres
Multiple MUs		$0		$0		$0	
	TOTAL:	**$2,356,000**	• **3,007 WUI acres** • **2 military facilities**	**$3,054,000**	• **174 WUI acres**	**$20,915,000**	• **3,879 WUI acres**

Note: Grazing: Future costs from grazing activities is limited to permit value losses. Costs associated with other project modifications are not included because areas excluded, proposed for exclusion, or considered for exclusion are very small relative the acreage proposed.

Exhibit C-3

COSTS ASSOCIATED WITH EXCLUDED FLYCATCHER CRITICAL HABITAT AREAS BY MANAGEMENT UNIT

Recovery Unit	Management Unit	Total Future Costs	Annual Future Costs	Non-Monetized Impacts	
				WUI Acres	Military/Tribal Lands
Coastal California	Santa Ynez	$0	$0	0	
	Santa Ana	$21,526,000	$2,032,000	377	• Marine Corps Base at Camp Pendleton • Fallbrook Naval Weapons Station
	San Diego	$3,431,000	$324,000	2,630	
Basin and Mojave	Owens	$0	$0	0	
	Kern	$0	$0	0	
	Mohave	$0	$0	0	
	Salton	$0	$0	0	
Lower Colorado	Little Colorado	$0	$0	0	
	Virgin	$0	$0	0	
	Middle Colorado	$0	$0	0	
	Pahranagat	$0	$0	0	
	Bill Williams	$0	$0	0	
	Hoover to Parker	$0	$0	0	
	Parker to Southerly	$0	$0	0	
Gila	Verde	$0	$0	0	
	Roosevelt	$0	$0	0	
	Middle Gila/San Pedro	$0	$0	0	
	Upper Gila	$0	$0	0	
Rio Grande	San Luis	$0	$0	0	
	Upper Rio Grande	$0	$0	0	
	Middle Rio Grande	$0	$0	0	
	Multiple Mus	$0	$0	0	
	TOTAL:	**$24,957,000S**	**$2,356,000**	**3,007**	

Notes: This exhibit represents costs associated with areas excluded as stated in the proposed rule.
Grazing: Future costs from grazing activities is limited to permit value losses. Costs associated with other project modifications are not included because areas excluded, proposed for exclusion, or considered for exclusion are very small relative the acreage proposed.

Exhibit C-4

COSTS ASSOCIATED WITH FLYCATCHER CRITICAL HABITAT AREAS PROPOSED FOR EXCLUSION BY MANAGEMENT UNIT

Recovery Unit	Management Unit	Total Future Costs	Annual Future Costs	Non-Monetized Impacts	
				WUI Acres	Military/Tribal Lands
Coastal California	Santa Ynez	$0	$0	0	
	Santa Ana	$0	$0	0	
	San Diego	$0	$0	0	
Basin and Mojave	Owens	$0	$0	0	
	Kern	$0	$0	0	
	Mohave	$0	$0	0	
	Salton	$0	$0	0	
Lower Colorado	Little Colorado	$0	$0	0	
	Virgin	$0	$0	0	
	Middle Colorado	$0	$0	0	
	Pahranagat	$0	$0	0	
	Bill Williams	$0	$0	0	
	Hoover to Parker	$0	$0	0	
	Parker to Southerly	$0	$0	0	
Gila	Verde	$103,000	$10,000	124	
	Roosevelt	$32,188,000	$3,038,000	2	
	Middle Gila/San Pedro	$64,000	$6,000	48	
	Upper Gila	$0	$0	0	
Rio Grande	San Luis	$0	$0	0	
	Upper Rio Grande	$0	$0	0	
	Middle Rio Grande	$0	$0	0	
	Multiple Mus	$0	$0	0	
	TOTAL:	**$32,355,000**	**$3,054,000**	**174**	

Notes: This exhibit represents costs associated with areas proposed for exclusion as stated in the proposed rule. Grazing: Future costs from grazing activities is limited to permit value losses. Costs associated with other project modifications are not included because areas excluded, proposed for exclusion, or considered for exclusion are very small relative the acreage proposed.

Exhibit C-5

COSTS ASSOCIATED WITH FLYCATCHER CRITICAL HABITAT AREAS CONSIDERED FOR EXCLUSION BY MANAGEMENT UNIT

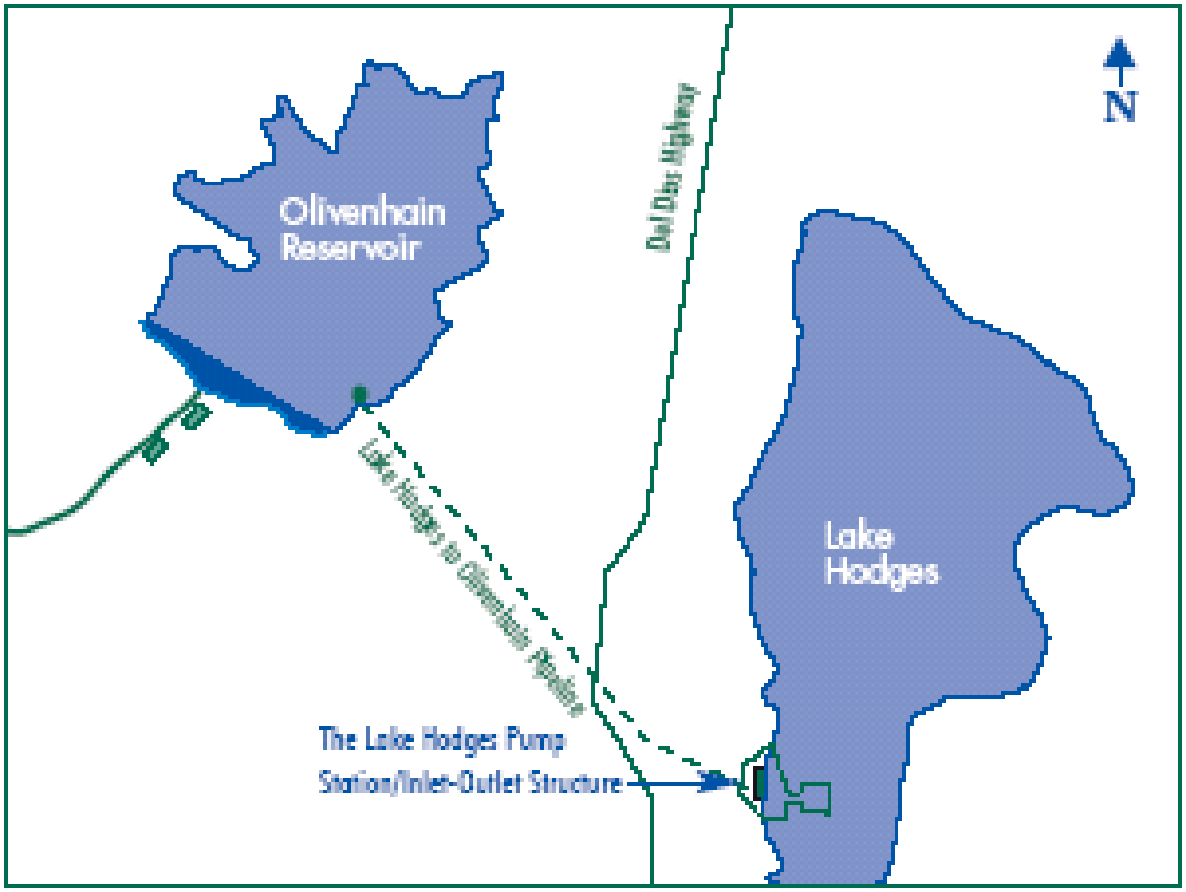
Recovery Unit	Management Unit	Areas Considered for Exclusion from CHD	Areas Considered for Exclusion from CHD	Non-Monetized Impacts	
				WUI Acres	Military/Tribal Lands
Coastal California	Santa Ynez	$0	$0	0	0
	Santa Ana	$0	$0	0	
	San Diego	$762,000	$72,000	289	
Basin and Mojave	Owens	$0	$0	0	
	Kern	$0	$0	0	
	Mohave	$0	$0	0	
	Salton	$83,000	$8,000	0	
Lower Colorado	Little Colorado	$0	$0	0	
	Virgin	$159,000	$15,000	0	
	Middle Colorado	$46,490,000	$4,388,000	0	
	Pahranagat	$1,272,000	$120,000	31	
	Bill Williams	$245,000	$23,000	0	
	Hoover to Parker	$84,665,000	$7,992,000	78	
	Parker to Southerly	$84,633,000	$7,989,000	221	
Gila	Verde	$128,000	$12,000	165	
	Roosevelt	$0	$0	0	
	Middle Gila/San Pedro	$0	$0	0	
	Upper Gila	$1,604,000	$151,000	976	
Rio Grande	San Luis	$106,000	$10,000	0	
	Upper Rio Grande	$495,000	$47,000	1,966	
	Middle Rio Grande	$931,000	$88,000	153	
	Multiple Mus	$0	$0	0	
	TOTAL:	**$221,573,000**	**$20,915,000**	**3,879**	

Notes: This exhibit represents costs associated with areas being considered for exclusion as stated in the proposed rule. Grazing: Future costs from grazing activities is limited to permit value losses. Costs associated with other project modifications are not included because areas excluded, proposed for exclusion, or considered for exclusion are very small relative the acreage proposed.

Appendix D

BACKGROUND AND HISTORICAL WATER STORAGE FOR RESERVOIR FACILITIES ASSESSED UNDER SCENARIO 2

Exhibit D-1
Proposed Connection Between Lake Hodges And Olivenhain Reservoir



Source: San Diego County Water Authority, Oliverhain-Hodges Pumped Storage Project Fact Sheet. July 2004.

Exhibit D-2

Lake Hodges Reservoir: Historical Water Storage and Water Lost Estimate under Scenario 2

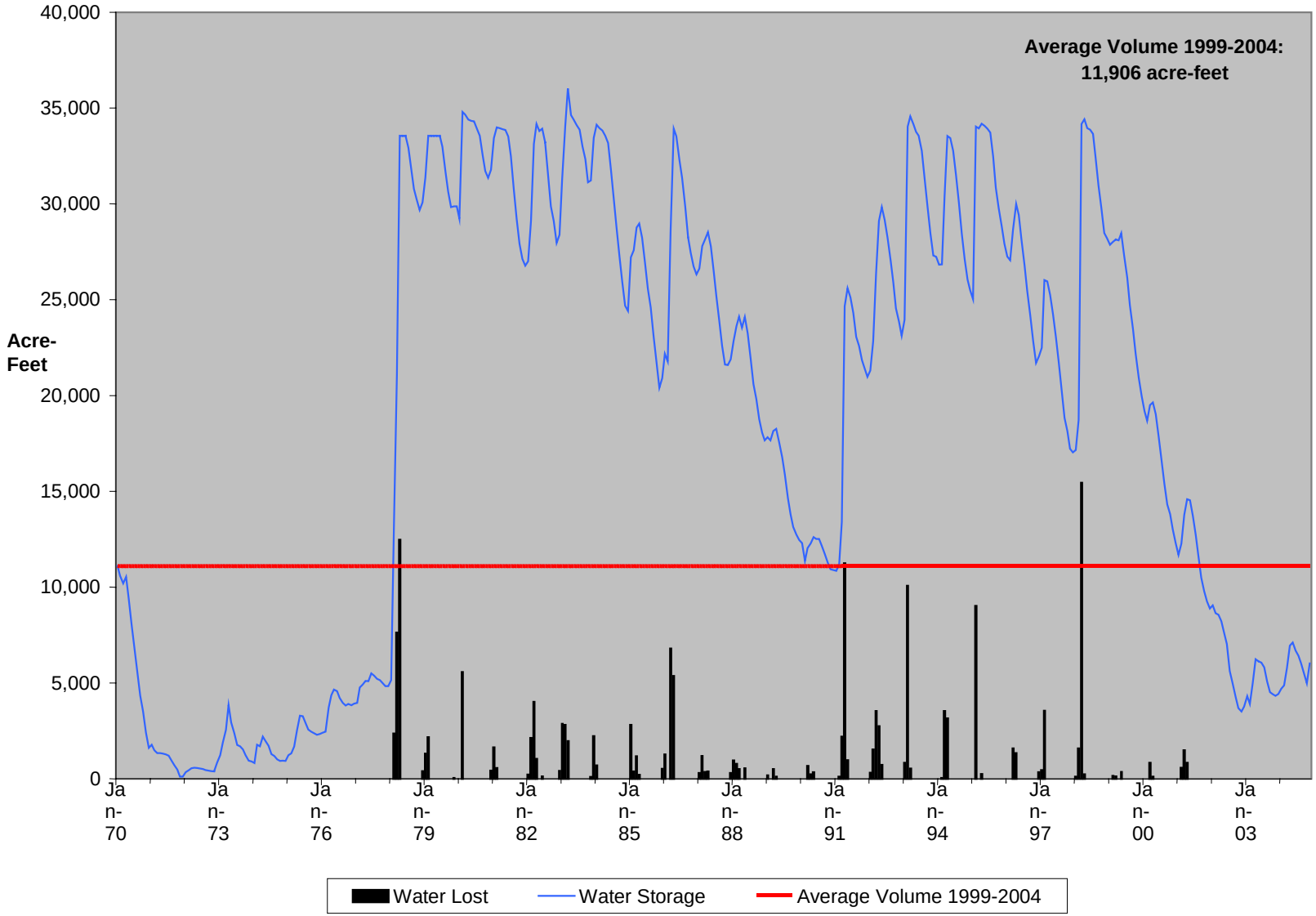


Exhibit D-3

Lake Cuyamaca Reservoir: Historical Water Storage and Water Lost Estimate under Scenario 2

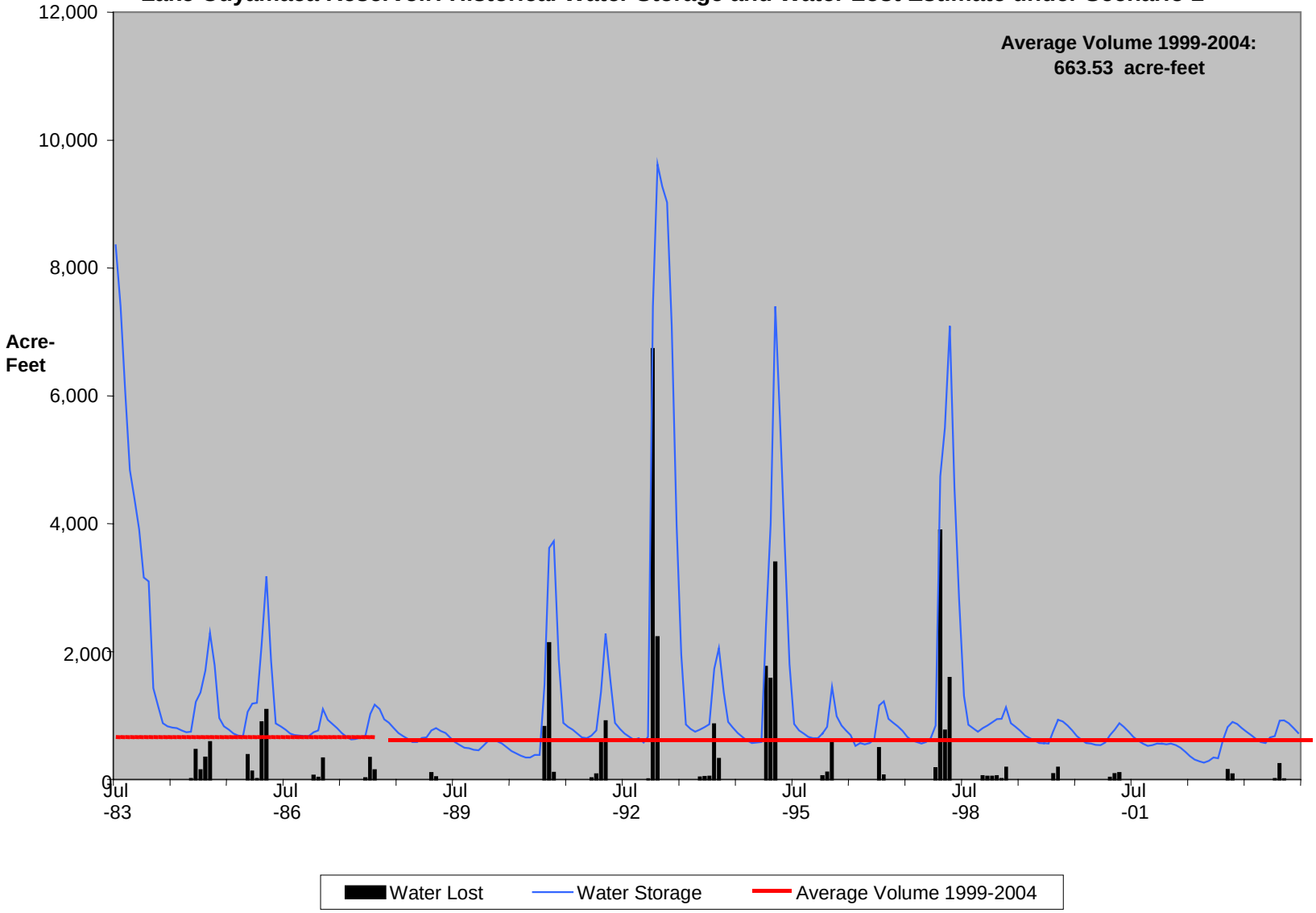
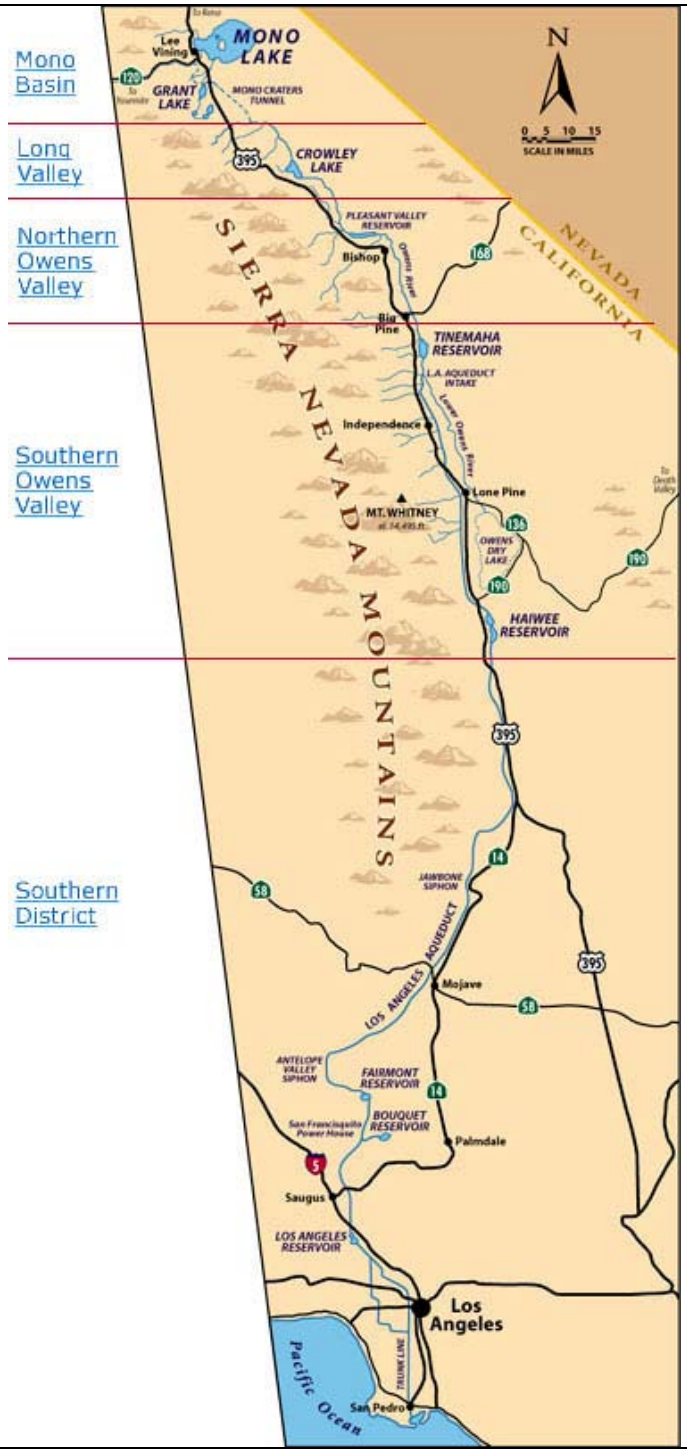


Exhibit D-4
Los Angeles Aqueduct Water System Along The Owens River, Including Pleasant Valley Dam



Source: Los Angeles Department of Water and Power. Online: http://wsoweb.ladwp.com/Aqueduct/operations/index.htm. Accessed on: February 7, 2005.

Exhibit D-5

Lake Vail Reservoir: Historical Water Storage and Water Lost Estimate under Scenario 2

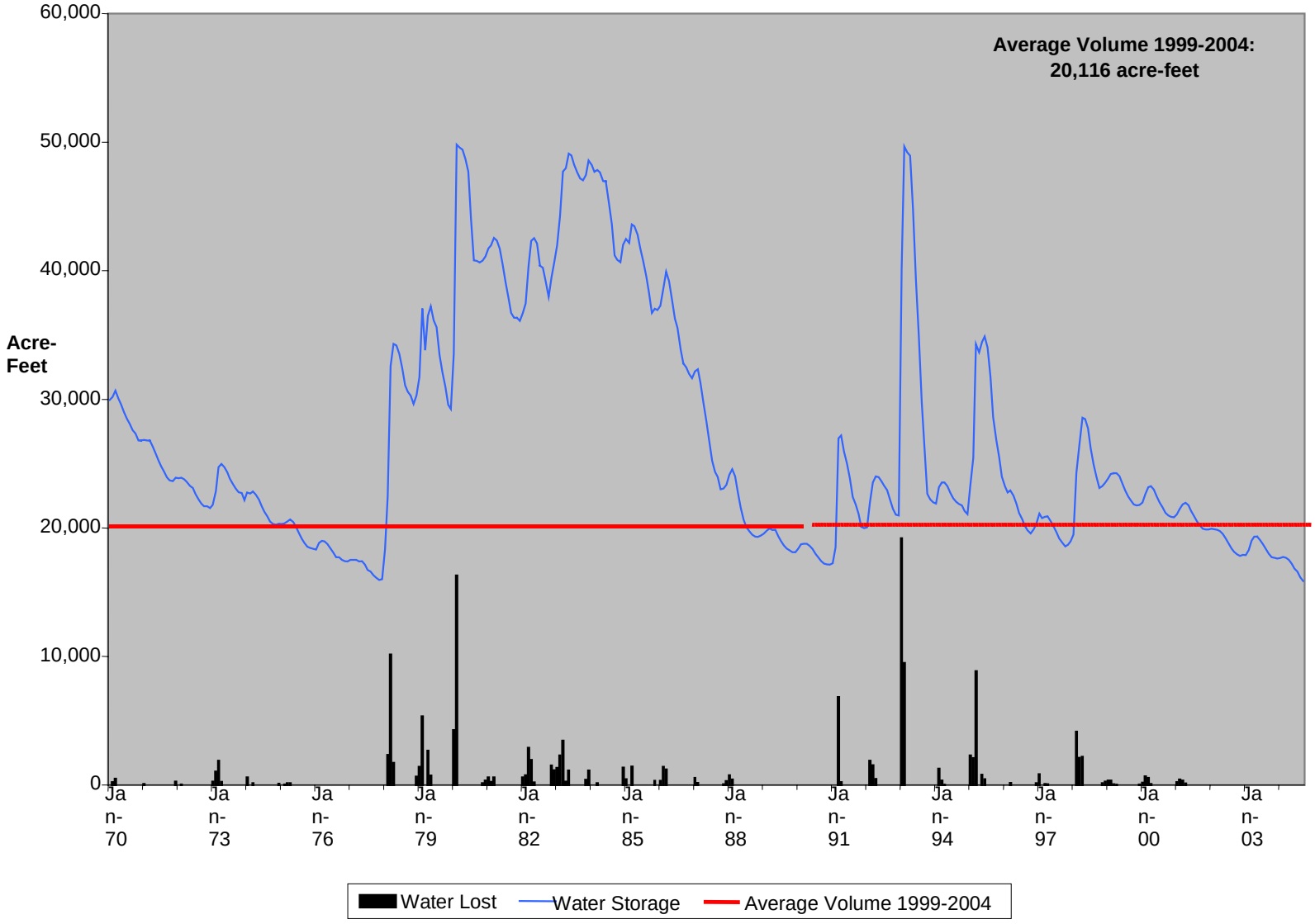
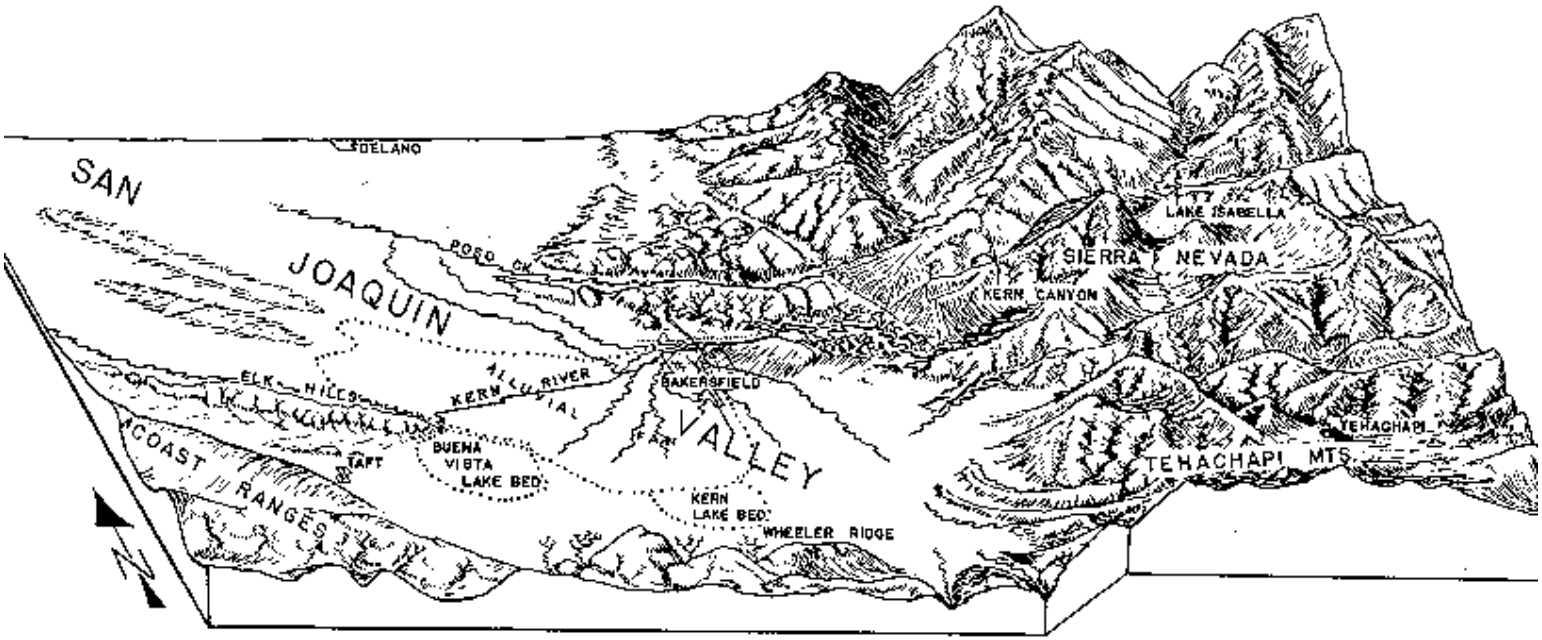


Exhibit D-6
Kern River Valley and Lake Isabella



Source: San Joaquin Valley Geological Society. Runoff from the Sierras. Accessed online on 2/14/2005 at http://www.sjgs.com/groundwater/GVblock.gif.

Exhibit D-7

Lake Isabella Reservoir: Historical Water Storage and Water Lost Estimate under Scenario 2

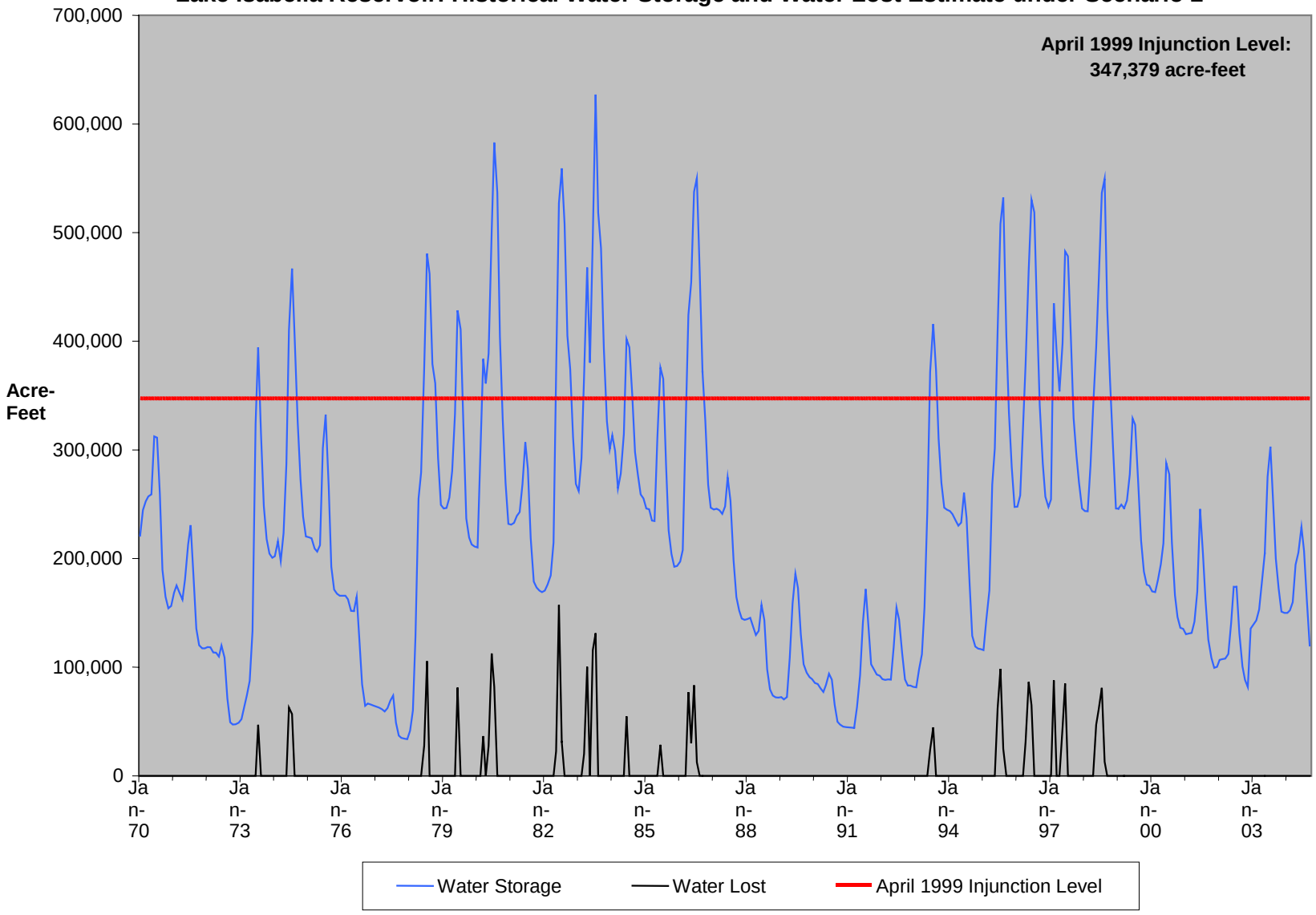
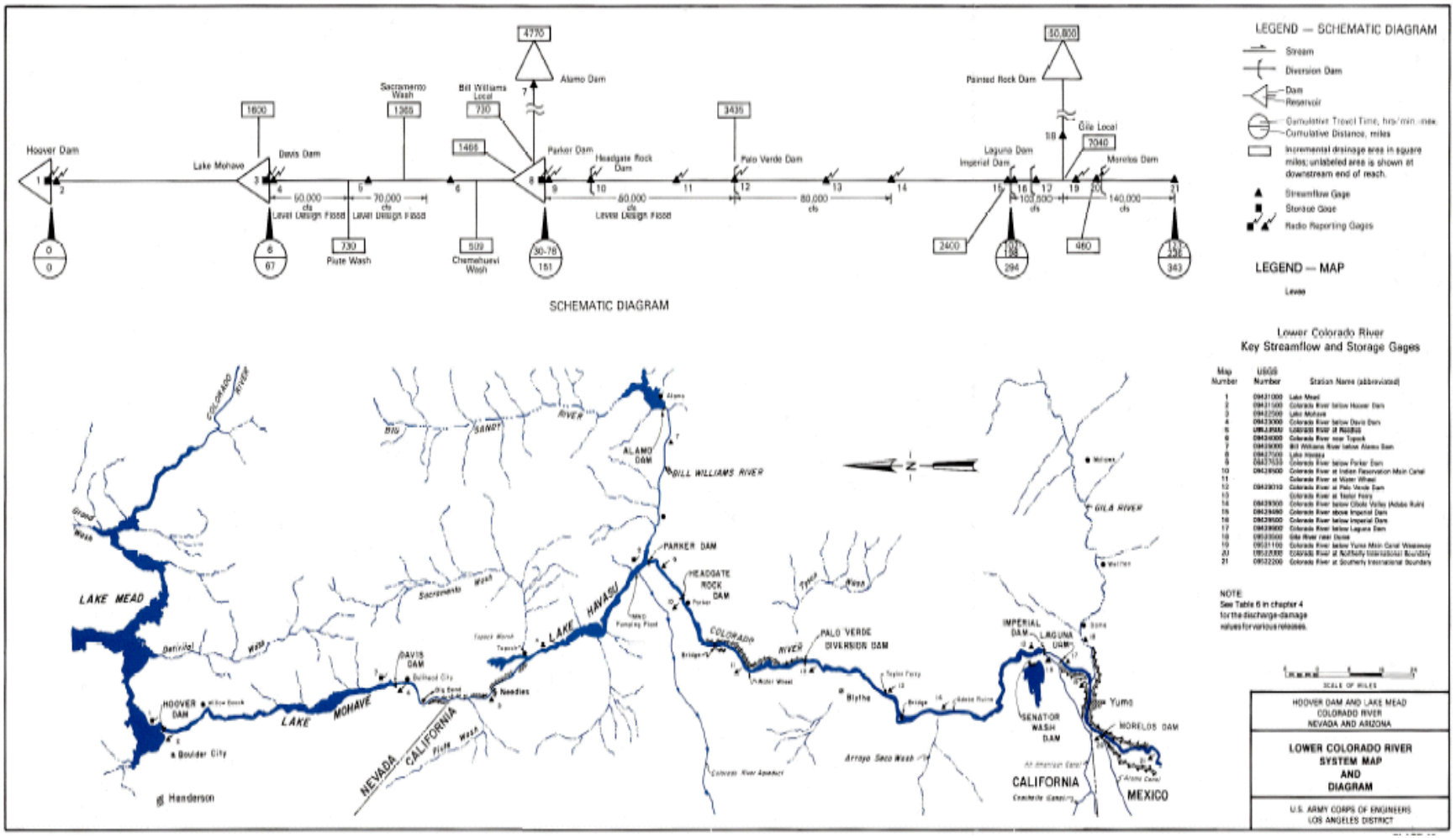
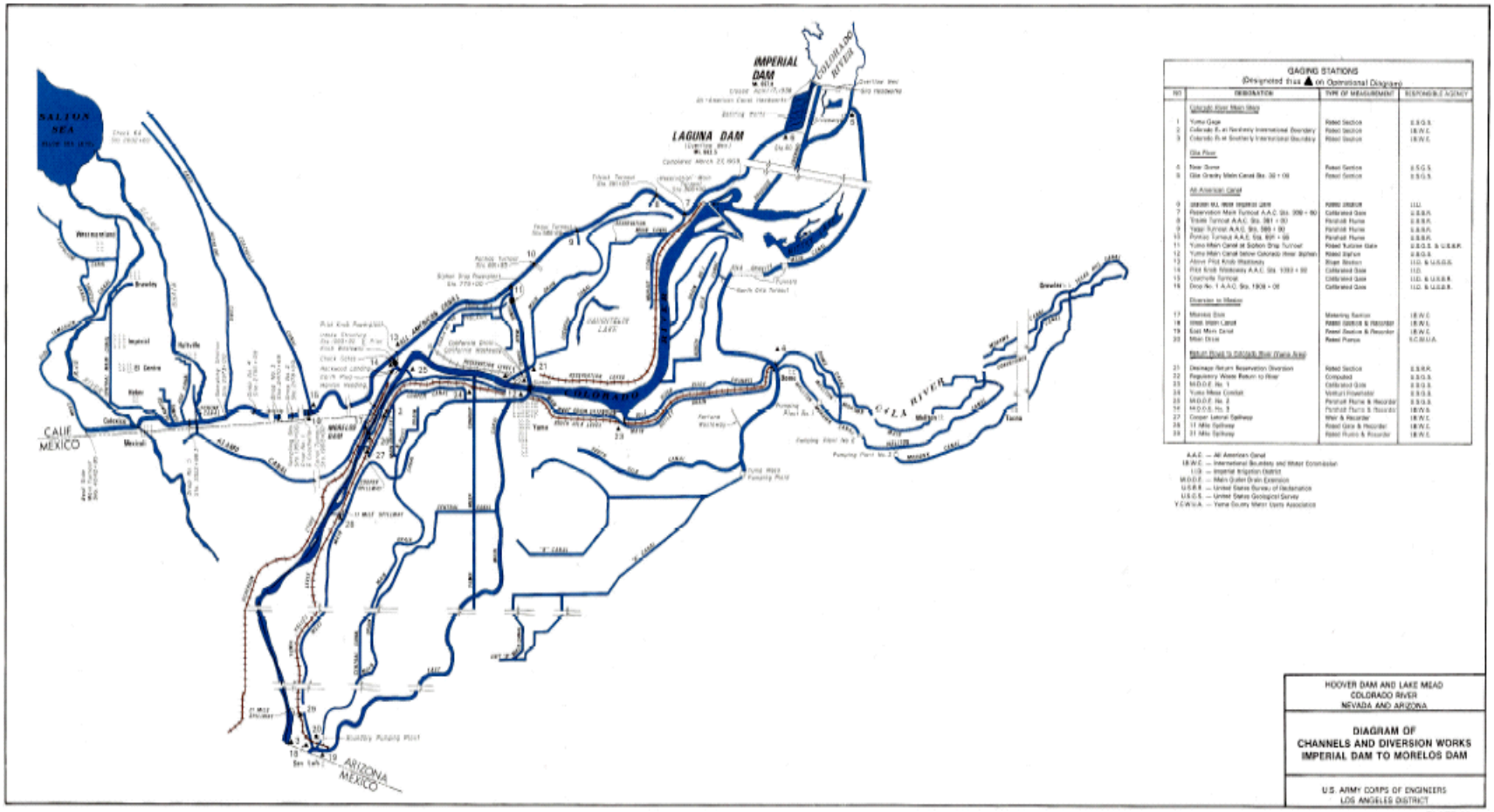


Exhibit D-8
Hoover Dam/Lake Mead System Map



Source: USACE, Water Control Manual for Flood Control, Hoover Dam and Lake Mead, Colorado River. Plate 19. December 1982.

Exhibit D-9
Hoover Dam/Lake Mead Reservoir



Source: USACE, Water Control Manual for Flood Control, Hoover Dam and Lake Mead, Colorado River. Plate 19. December 1982.

Exhibit D-10

Lake Mead Reservoir: Historical Water Storage and Water Lost Estimate Under Scenario 2

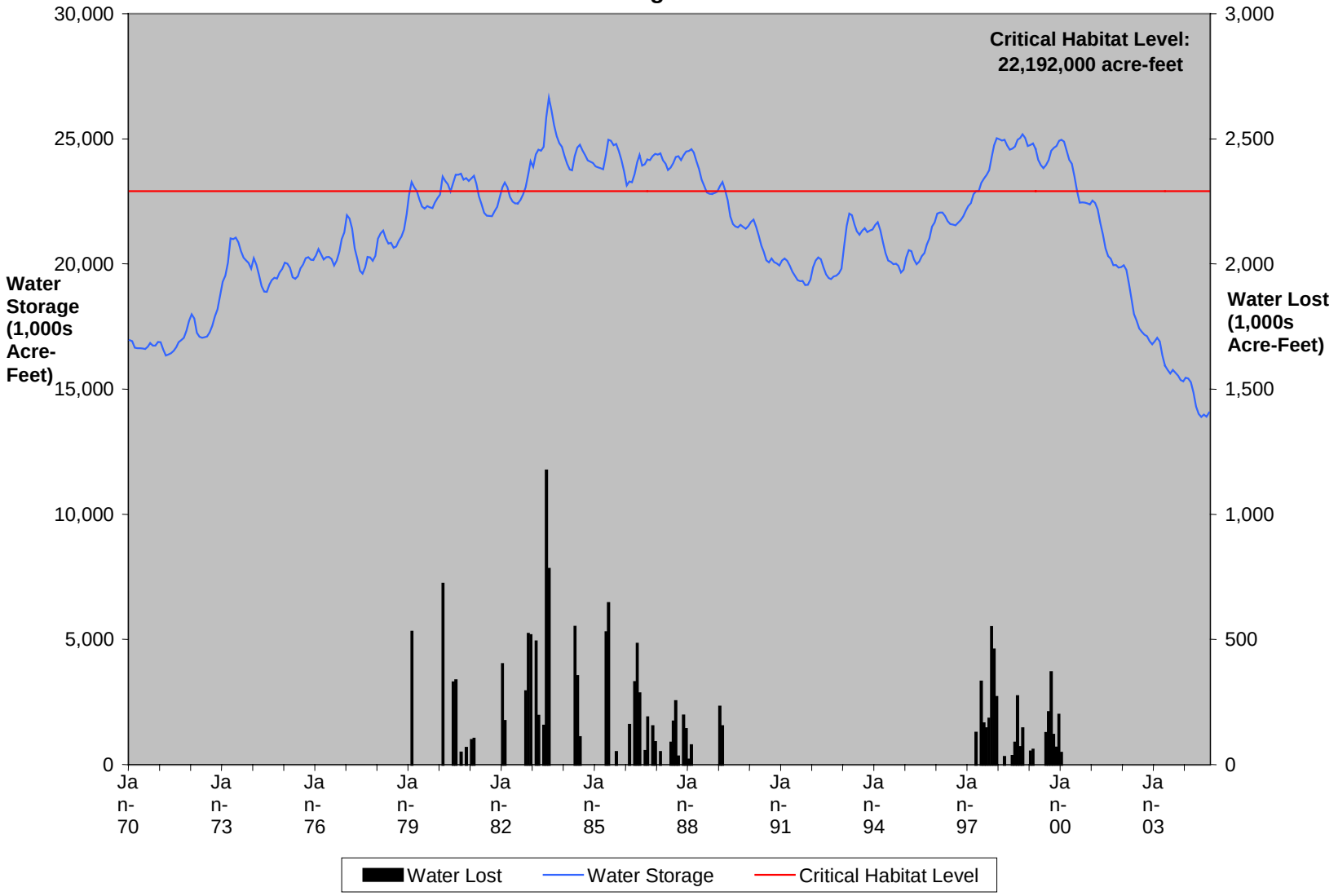
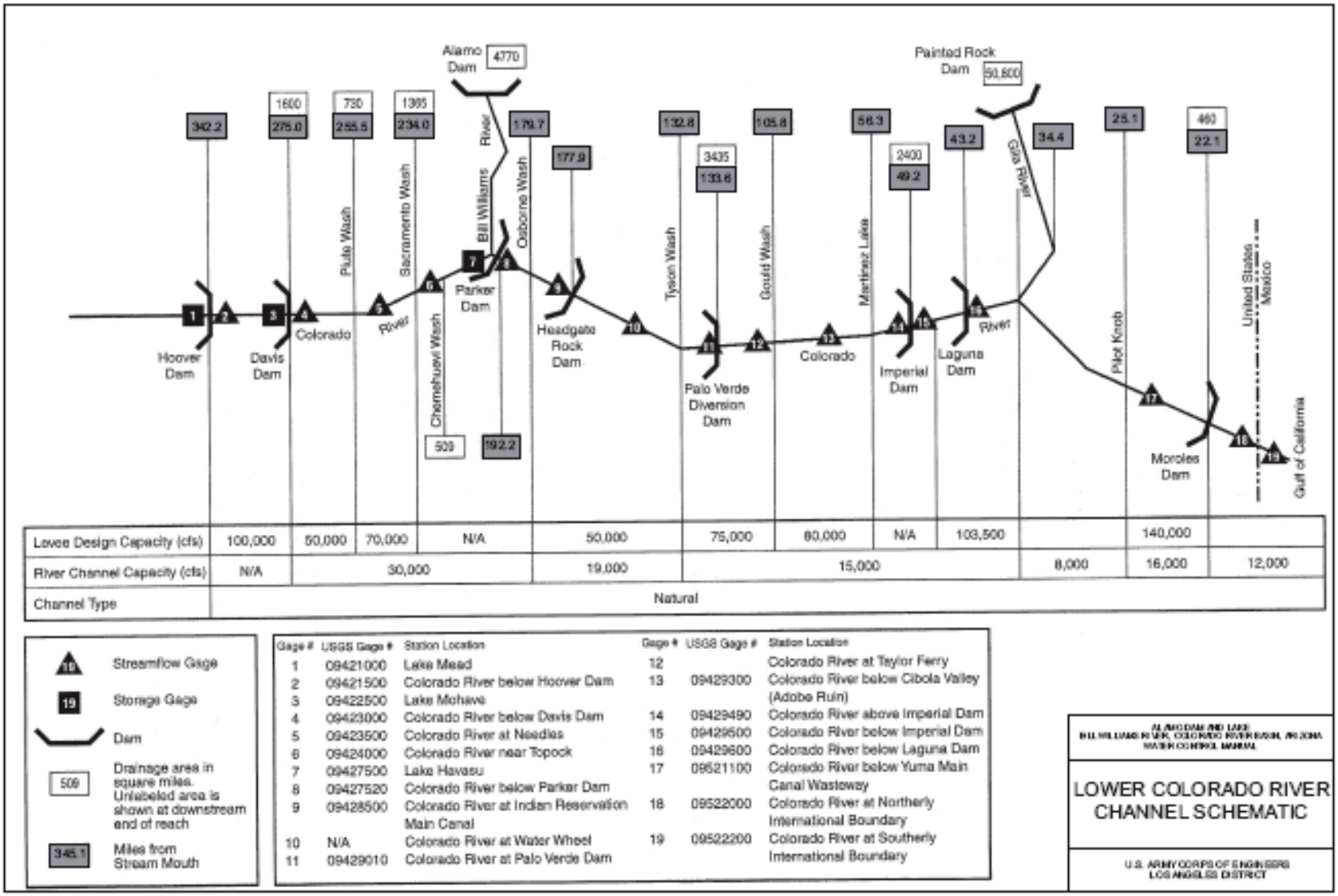
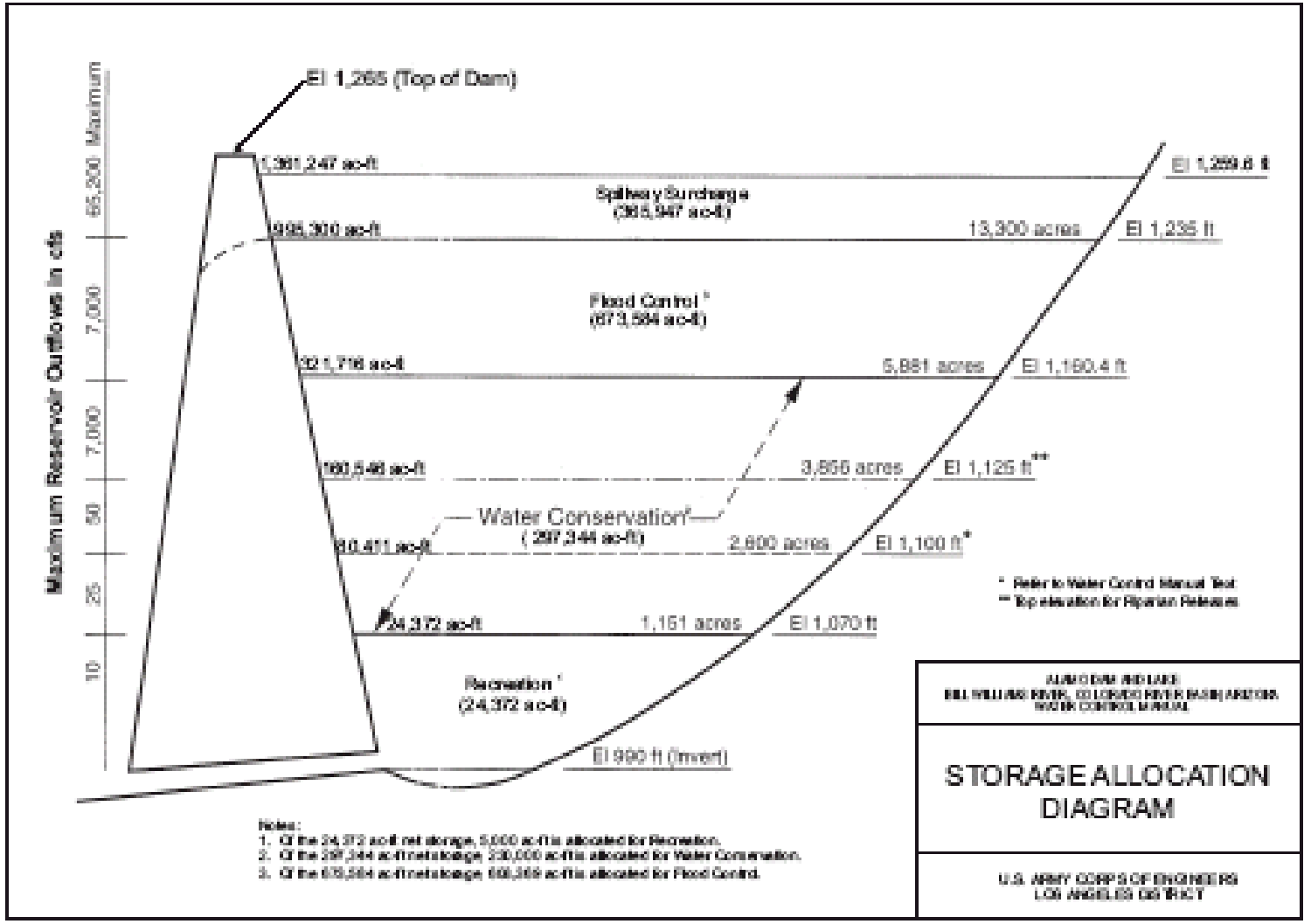


Exhibit D-11
Lower Colorado River Channel Schematic



Source: USACE, Water Control Manual, Lake Alamo, Colorado River Basin, Bill Williams River, Arizona. Plate 3-01. October 2003.

Exhibit D-12
Alamo Dam Storage Allocation Diagram



Source: USACE, Water Control Manual, Lake Alamo, Colorado River Basin, Bill Williams River, Arizona. Plate 7-01. October 2003.

Exhibit D-13
Lake Havasu Reservoir: Historical Water Storage and Water Loss Estimate Under Scenario 2

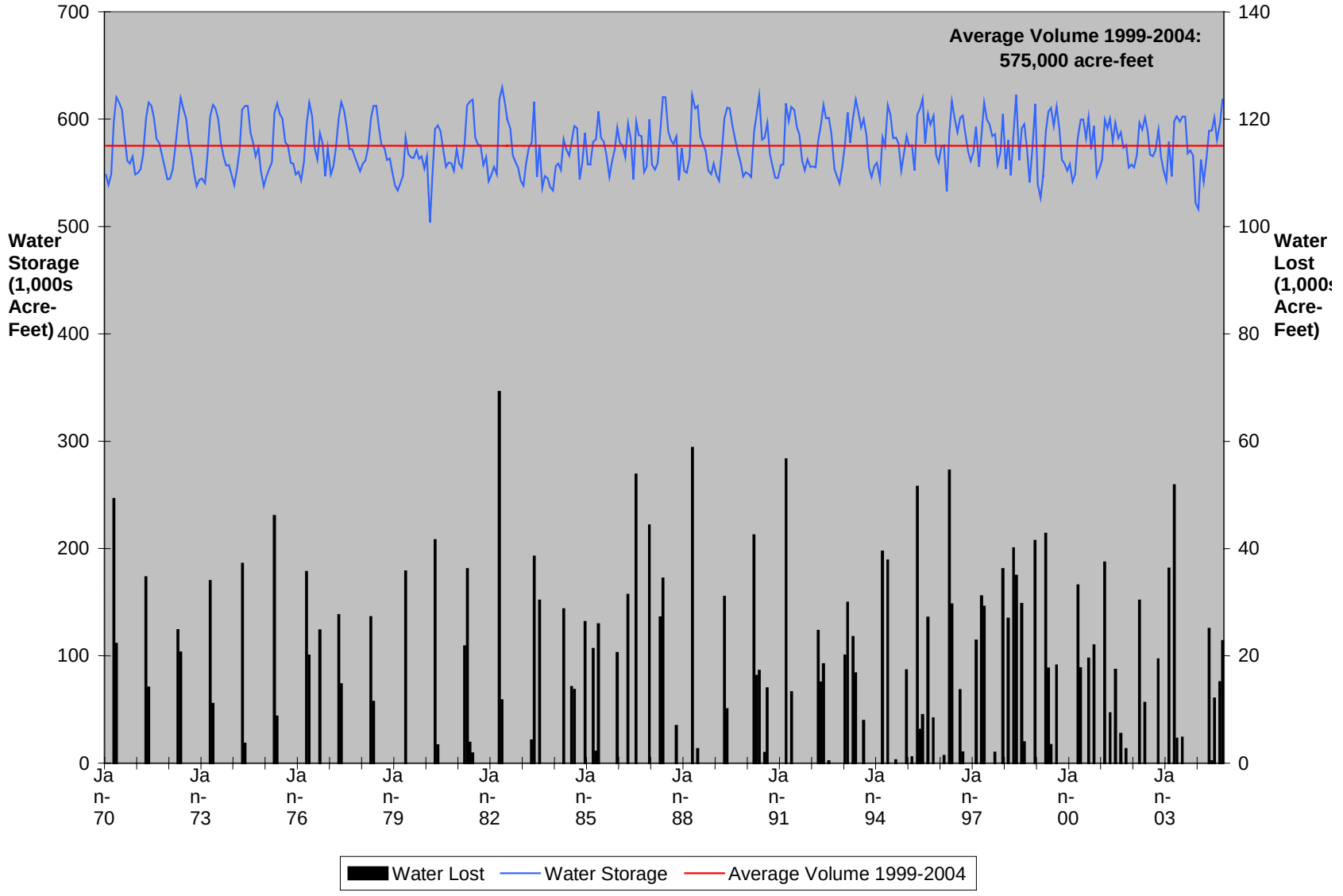
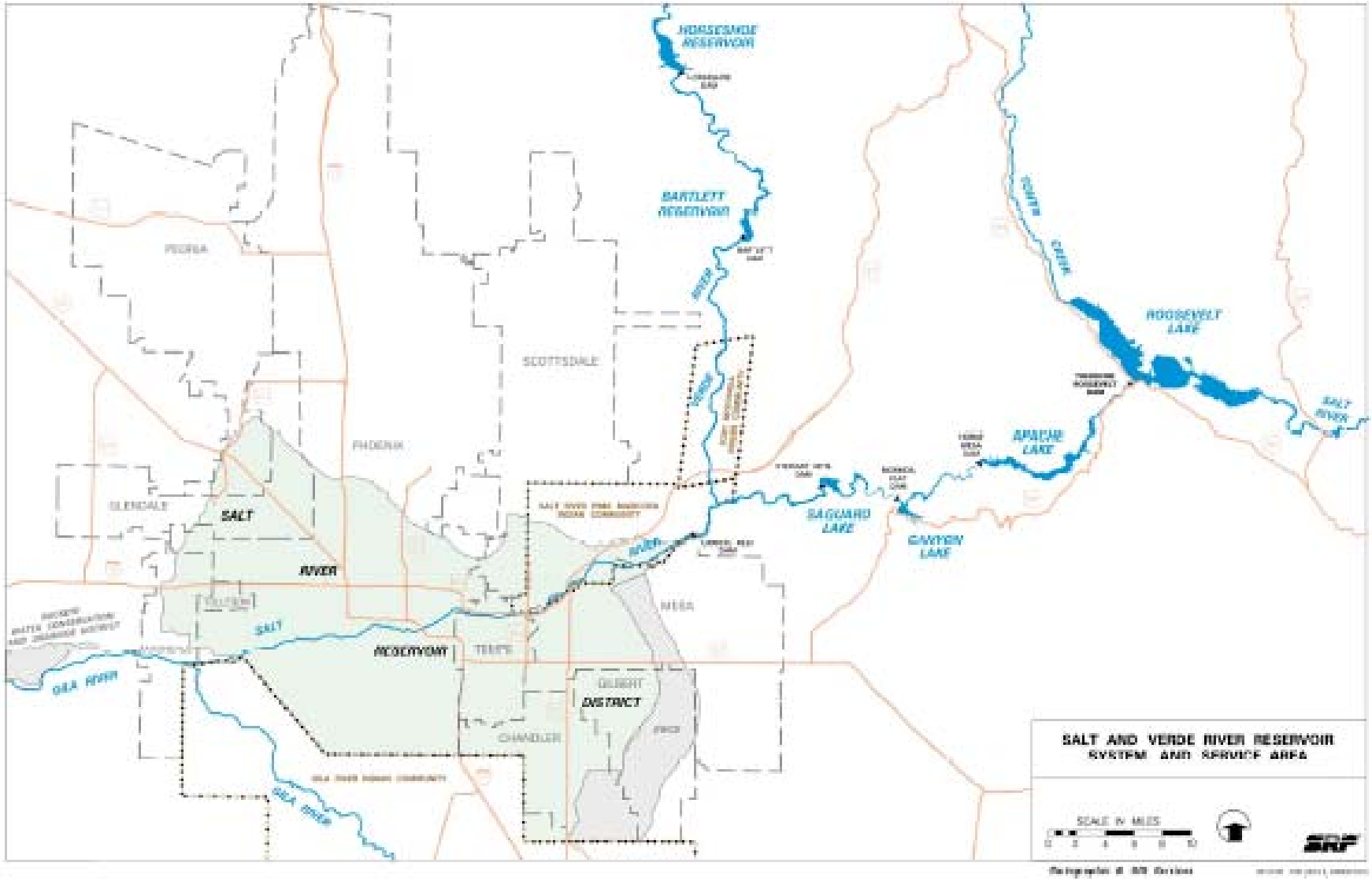
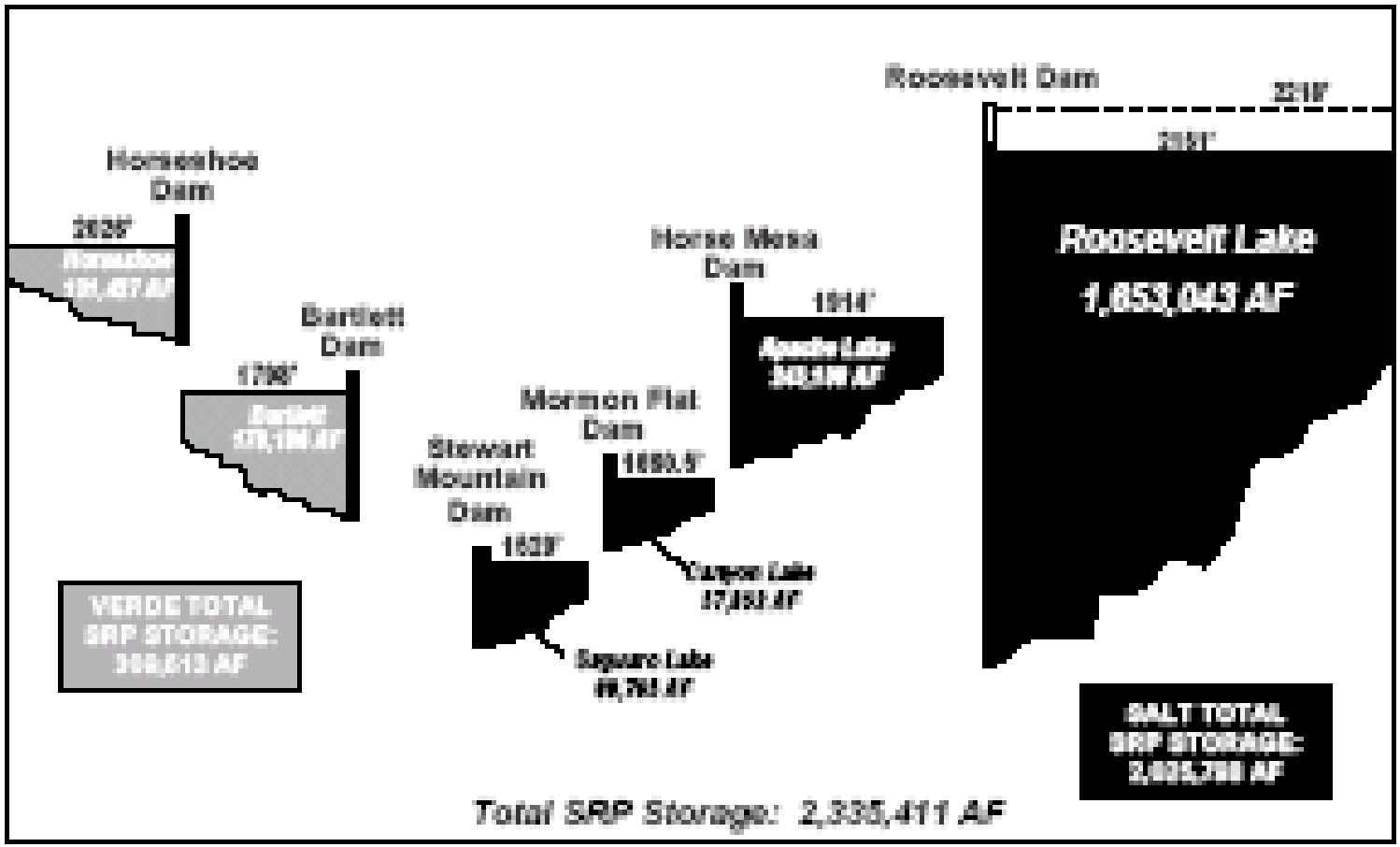


Exhibit D-14
Roosevelt Reservoir Water System



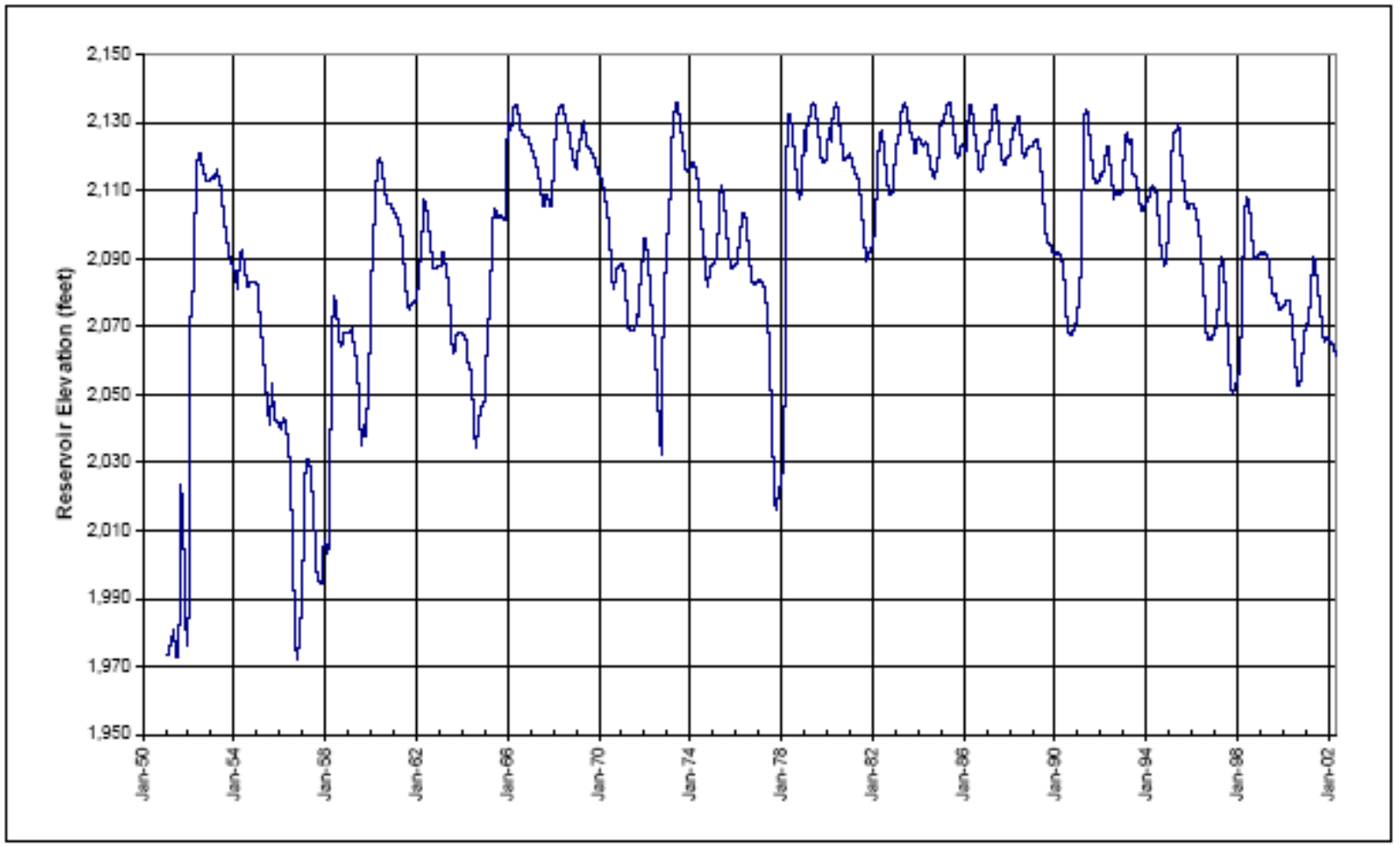
Source: Salt River Project, Roosevelt Habitat Conservation Plan, Gila and Maricopa Counties, Arizona, Volume II, page 12, December 2002

Exhibit D-15
Salt and Verde Reservoir Systems Capacity in Acre-Feet



Note: The maximum conservation storage elevation above mean sea level is shown for each dam, and the maximum flood control elevation (2,218 feet) is also shown for Roosevelt.
Source: Salt River Project, Roosevelt Habitat Conservation Plan, Gila and Maricopa Counties, Arizona, Volume II, page 15. December 2002

Exhibit D-16
Historical Roosevelt Elevations, 1951 Through April 2002



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Personal Communications

Albert Sillas, Fisheries Biologist, Prescott National Forest, September 17, 2004.

Arlene Kingery, Environmental Department, Quechan Tribe, August 18, 2004 and November 3, 2004.

Barbara Romero, Recreation Specialist, Apache Sitgreaves National Forest, September 9, 2004.

Bill Pyott, Bureau of Indian Affairs Fort Yuma, July 15, 2004.

Bob Douglas, Wildlife Biologist, UT BLM, October 1, 2004).

Bob Lau, Environment Department, Camp Verde Yavapai Apache, September 1, 2004.

Brian Golding, Economic Development Dept., Quechan Tribe, September 27, 2004.

Brian Tillemans, City of Los Angeles Department of Water and Power, September 8, 2004.

Bruce Hafenfeld, Lake Isabella Allotment Permittee, August 26, 2004.

Bruce Williams, Daily Operations Team Lead, Boulder Canyon Operation Office, USBR, December 22, 2004.

Carl Christesen, San Carlos Irrigation Project, November 1, 2004.

Carvel Bass, USACE, Los Angeles District, October 1, 2004.

C.H. Williams, Kern River Watermaster, November 11, 2004.

Chris Tomlinson, Nevada State Department of Wildlife, September 14, 2004.

Chuck Paradzick, Arizona Game and Fish Department, April 8, 2004.

Clark Pharr, Kern County Engineering and Survey Services Department, August 18, 2004.

Clark Richens, BIA San Carlos Agency, October 27, 2004.

Craig Elitharp, Rancho California Water District, November 2004.

David Todd, Environmental Director, Chemehuevi Tribe, August 24, 2004.

David Waller, NV BLM, September 13, 2004.

Deanna Williams, Carson National Forest, August 24, 2004.

Don Bay, Hualapai Natural Resources Department, September 2, 2004.

Doug Zuber, Harvard Investments, September 21, 2004.

Edie Lohmann, National Flood Insurance Program, October 9, 2004.

Elaine Leslie, Biologist, Grand Canyon NP, August 30, 2004.

Greg Mayer, Deputy City Engineer, Public Works Department, City of Oceanside, MA, September 9, 2004.

Hualapai Tribe, July 6, 2004.

Jack McCormick, Prescott AMA, Arizona Department of Water Resources, October 22, 2004.

James Pena, Natural Resources Department, San Ildefonso Pueblo, September 3, 2004.

Jerry Hittleman, Senior Environmental Planner, City of Oceanside, October 6, 2004.

Jim Doctor, Pahranagat National Wildlife Refuge, September 14, 2004.

John Allred, Gila River Water Commissioner's Office, November 5, 2004.

John McGlothlen, USBR, August 24, 2004.

John Sorrell, Water Resources Department, Isleta Pueblo, August 16, 2004.

Joy Jaiswal, USACE Los Angeles District, October 20, 2004.

Kevin Eatherly, City of Yuma Project Manager, September 24, 2004.

Kirsten Winter, Cleveland National Forest, August 27, 2004.

Larry Campbell, Helix Water District, November 22, 2004.

Lenore Volturno, Environmental Director, Pala Tribe, September 9, 2004.

Linda Jalbert, Outdoor Recreation Planner, Grand Canyon NP, September 28, 2004.

Loren Hays, Fish and Wildlife Biologist, September 16, 2004.

Maresh Varma, San Bernardino County Flood Control District, August 4, 2004.

Matthew Spriggs, Senior Planner, City of Yuma, September 16, 2004.

Mekbib Degaga, Riverside County Flood Control and Water Conservation District, August 18, 2004.

Melissa Scott, CO Bureau of Land Management, August 31, 2004.

Melvin Herrera, Range Conservationist, Carson National Forest, August 26, 2004.

Ralph Pope, Ranger, Silver City Ranger District, Gila National Forest, August 25 and 27 2004.

RBF Consulting (San Jose, California), EDAW (Sacramento, California) and HT Harvey & Associates (Watsonville, California), February 24–28, 2003.

Richard Padilla, Planning and Zoning Department, Valencia County, September 8, 2004.

Richard Sertich, Albuquerque Planning Department, Undated.

Rick Mendoza, Orange County Water District, September 15, 2004.

R.J. Hughes, Outdoor Recreation Planner, BLM St. George, Utah office, September 30, 2004.

Rob Roy, Environmental department, La Jolla Tribe, September 20, 2004.

Rodney Kephart, Councilman, Santa Ysabel, September 21, 2004.

Ross Haley, Wildlife Biologist, Lake Mead National Recreation Area, July 15, 2004.

Sean Skaggs, Attorney representing Rincon Tribe, August 18, 2004.

Service Hydrologist, Branch of Water Resources, Service, November 10, 2004.

Service personnel, Region 2, August 9, 2004.

Service personnel, Carlsbad Field Office, September 14, 2004.

Sky Wagner, Biologist, Imperial National Wildlife Refuge, September 28, 2004.

Staff, LAPWD, November 18, 2004.

Stefanie White, San Carlos Apache Recreation and Wildlife Department, August 24 and 26 and September 8, 2004.

Steve Loe, San Bernardino National Forest, August 20, 2004 and August 24, 2004.

Susan Wynn, Fish and Wildlife Biologist, September 14, 2004.

Tiffany Kayama, USACE Los Angeles District, September 3, 2004.

Todd Willard, Cave Creek Ranger District, Tonto National Forest, August 27, 2004.

Vicente Ordonez, Wildlife Biologist, USFS Apache-Sitgreaves National Forest, August 13 and September 13, 2004.

Victoria Wesley, Forest Resource Program, San Carlos Apache Tribe, August 30, 2004.

Wally Murphy, USFS Region 3, September 3, 2004.

Yvonne Reinink, Salt River Project, November 30, 2004.